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# Mega Objective General Knowledge

**Volume - II**



**2500** Questions on  
Physics, Chemistry,  
Biology, Botany &  
Zoology

V.V.K. Subburaj

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# MEGA

## OBJECTIVE GENERAL KNOWLEDGE

### VOLUME - II

### • PHYSICS •

1. A lens with power +1 dioptre must have its focal length equal to
  - a) 100 cm
  - b) 10 cm
  - c) 1 cm
  - d) 1000 cm
2. What is the increasing order of the wavelengths of the following colours?
  1. Orange
  2. Indigo
  3. Yellow
  4. Violet
  - a) 1,2,3,4
  - b) 3,1,4,2
  - c) 1,3,2,4
  - d) 4,2,3,1
3. A wooden block is floating in water. If  $\frac{4}{5}$  of its volume is immersed in water and volume of the water displaced is 800 ml, the volume of the block is
  - a) 1140 ml
  - b) 200 ml
  - c) 800 ml
  - d) 1000 ml
4. Which one of the following will take place when a watch based on oscillating spring is taken to a deep mine?
  - a) It will become slow
  - b) It will become fast
  - c) It will indicate the same time as on earth
  - d) It will stop working
5. The colour of an opaque object is due to the colour it
  - a) absorbs
  - b) refracts
  - c) reflects
  - d) scatters
6. The working of the quartz crystal in the watch is based on the
  - a) Photoelectric Effect
  - b) Johnson Effect
  - c) Piezo-electric Effect
  - d) Edison Effect
7. Which one of the following is not an astronomical object?
  - a) Pulsar
  - b) Brittle Star
  - c) Black Hole
  - d) Quasar
8. The formation of brilliant colours in a thin soap film is a consequence of the phenomena of
  - a) Multiple reflection and interference
  - b) Multiple refraction and dispersion
  - c) Diffraction and dispersion
  - d) Polarisation and interference

Ans: 1. A    2. D    3. D    4. C    5. C    6. C  
      7. B    8. A



9. In case of uniform circular motion, the acceleration is  
 a) zero  
 b) constant in magnitude and directed radially inwards  
 c) variable in magnitude but constant in direction  
 d) variable in magnitude but tangential to the circle
10. A corked bottle full of water when frozen will break because  
 a) the bottle contracts on freezing  
 b) the volume of water decreases on freezing  
 c) the volume of water increases on freezing  
 d) glass is a bad conductor of heat
11. Match List I with List II and select the correct answer by using the codes given below the lists.

List -I (Instrument)	List-II (Use)
A) Barometer	1. Used for measuring the altitudes and angles in navigation and astronomy
B) Chronometer	2. Used for measurement of angular distances between two objects
C) Sextant	3. Keeps very accurate time as the one that is used to determine longitude at sea
D) Quadrant	4. Used for measuring atmospheric pressure

	A	B	C	D
a)	2	4	5	1
b)	5	1	3	4
c)	2	1	4	3
d)	1	2	4	3

12. The basic reason for the extraordinary sparkle of a suitably cut diamond is that  
 a) it has a very high transparency  
 b) it has a very high refractive index  
 c) it is very hard  
 d) it has well defined cleavage planes
13. The speed of light will be minimum while passing through  
 a) glass  
 b) vacuum  
 c) water  
 d) air

9. A    10. C    11. D    12. B    13. A

14. In an electronic watch, the component corresponding to pendulum of a pendulum clock is a  
a) transistor                      b) crystal oscillator  
c) diode                              d) balance wheel
15. The difference between a nuclear reactor and an atomic bomb is that  
a) no chain reaction takes place in nuclear reactor, while in the atomic bomb there is a chain reaction  
b) the chain reaction in nuclear reactor is controlled  
c) the chain reaction in nuclear reactor is not controlled  
d) no chain reaction takes place in atomic bomb while it takes place in nuclear reactor
16. An air bubble in water will act like a  
a) convex mirror                      b) convex lens  
c) concave mirror                      d) concave lens
17. Optical fibre works on the principle of  
a) total internal reflection      b) refraction  
c) scattering                              d) interference
18. Cryogenic engines find applications in  
a) sub-marine propulsion  
b) frost-free refrigerators  
c) rocket technology  
d) researches in superconductivity
19. Domestic electric wiring is basically a  
a) series connection                      b) parallel connection  
c) combination of series and parallel connections  
d) series connection within each room and parallel connection elsewhere
20. Total internal reflection can take place when light travels from  
a) Diamond to glass                      b) Water to glass  
c) Air to water                              d) Air to glass
21. A simple machine helps a person in doing  
a) Less work  
b) The same amount of work with lesser force  
c) The same amount of work slowly  
d) The same amount of work much faster

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14. B	15. B	16. D	17. A	18. C	19. C
20. A	21. B				

---

22. The splitting of different colours of light in a prism is  
a) Reflection of light                      b) Dispersion of light  
c) Diffraction of light                    d) Refraction of light
23. Ball bearings are used in cycles, scooters, etc. to  
a) Reduce the friction between the wheel and the axle  
b) Increase the friction between the wheel and the axle  
c) Reduce the friction between ground and the wheel  
d) None of these
24. The working principle of a washing machine is  
a) diffusion                                  b) reverse osmosis  
c) dialysis                                  d) centrifugation
25. Electromagnetic theory was proposed by  
a) Newton                                  b) Huygens  
c) Maxwell                                  d) Max Planck
26. Ozone layer in the upper atmosphere is due to the reactions of  
a) carbon dioxide and layers of atmosphere  
b) carbon dioxide and oxygen  
c) oxygen and ultraviolet rays  
d) infra-red rays and ultraviolet rays.
27. What kind of energy is stored in a dry cell?  
a) Mechanical                              b) Electrical  
c) Chemical                                d) Heat
28. Experimental verification of electromagnetic theory was done by  
a) Hertz                                      b) James Clark  
c) Maxwell                                d) Huygens
29. Green house effect is the heating up of earth's atmosphere due to  
a) the infra-red rays                      b) the ultraviolet rays  
c) X-rays                                    d) greeny plants
30. Visible spectrum lies between  
a) radio waves and micro waves  
b) infrared spectrum and ultraviolet rays  
c) microwaves and infra-red spectrum  
d) X-rays and gamma rays

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22. D	23. A	24. D	25. C	26. C	27. C
28. D	29. A	30. B			

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31. Radio waves, microwaves, infra-red spectrum, ultraviolet rays, X-rays and gamma rays are classified as  
 a) light waves                      b) electromagnetic waves  
 c) electric waves                  d) magnetic waves
32. Light waves  
 a) can travel in perfect vacuum  
 b) require air to travel through  
 c) require an electric field to travel through  
 d) require a magnetic field to travel through
33. Which of the following waves will best penetrate fog or low cloud?  
 a) infra-red                      b) radio  
 c) ultraviolet                  d) visible light
34. Polaroids are used to  
 a) increase glare                  b) avoid glare  
 c) filter the entire light          d) none of the above
35. The rays, that are used in some medical applications and in sterilisation processes, are  
 a) gamma rays                  b) visible light  
 c) X-rays                      d) ultraviolet rays
36. A monochromatic source is  
 a) white light                  b) sun light  
 c) sodium vapour lamp          d) none of the above
37. The powerful source of ultraviolet radiation is  
 a) any hot substance          b) laser  
 c) any chemical substance      d) sun
38. The layer which is composed partly of electrons and positive ions is known as  
 a) stratosphere                  b) ionosphere  
 c) atmosphere                  d) troposphere
39. The energy associated with each photon is  
 a)  $(hv) - I$                       b)  $\frac{h}{\nu}$   
 c)  $\frac{\nu}{h}$                               d)  $h\nu$

---

31. B	32. A	33. A	34. B	35. D	36. C
37. D	38. B	39. D			

---

40. Splitting of white light by a prism into its component colours is called  
a) interference                      b) dispersion  
c) diffraction                      d) polarisation
41. For the study of spectra, the instrument generally used is  
a) spectrometer                      b) pyrometer  
c) spherometer                      d) microscope
42. The central core of the atmosphere is called  
a) chromosphere                      b) ionosphere  
c) stratosphere                      d) photosphere
43. Laser is a device for  
a) production of a beam of white light  
b) producing a beam of monochromatic and coherent light  
c) producing a beam of high intensity incoherent light  
d) producing a beam of highly penetrating X-rays.
44. During change of state, the temperature  
a) rises                      b) falls  
c) remains constant                      d) may rise or may fall
45. Soft iron is used to manufacture electromagnets, because their  
a) magnetic saturation limit is high and retentivity and coercive force are small  
b) retentivity is high  
c) coercive force is high                      d) area of hysteresis is large
46. Bodies which allow the charge to pass through are called  
a) conductors                      b) insulators  
c) dielectrics                      d) none of the above
47. Bodies which do not allow the charge to pass through are called  
a) conductors                      b) capacitors  
c) insulators                      d) resistors
48. Which of the following is an insulator?  
a) Mica                      b) Ebonite  
c) Plastic                      d) All the above
49. Escape velocity from the Earth's surface is  
a) equal to that from the Moon's surface  
b) greater than that from the Moon's surface  
c) less than that from the Moon's surface  
d) equal to that from the Sun's surface

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40. B	41. A	42. D	43. D	44. A	45. A
46. A	47. C	48. D	49. B		

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50. One micron is equal to
  - a)  $10^{-6}$  m
  - b)  $10^{-5}$  m
  - c)  $10^{-4}$  m
  - d)  $10^{-3}$  m
51. The phenomenon of resonance is used in
  - a) Radio
  - b) capacitor
  - c) Transformer
  - d) amplifier
52. Split ring in a generator helps
  - a) to convert a.c. into d.c. volts
  - b) to convert d.c. into a.c. voltage
  - c) to convert a low voltage into high voltage
  - d) to convert a low current into high current
53. A transformer
  - a) transforms energy
  - b) transforms frequency
  - c) transforms voltage
  - d) generates emf
54. A transformer works only on
  - a) D.C.
  - b) A.C.
  - c) Both A.C. and D.C
  - d) Neither A.C. nor D.C.
55. Most gases conduct electricity at
  - a) normal pressure
  - b) very low pressure
  - c) very high pressure
  - d) none of the above
56. The penetrating power of X-rays depends upon the
  - a) hardness of the target metal
  - b) filament current
  - c) nature of the gas inside the tube
  - d) none of the above
57. Magnetron is used for the production of
  - a) X-rays
  - b) Cathode rays
  - c) microwaves
  - d) RF waves
58. ICs are generally made of
  - a) Germanium
  - b) Silicon
  - c) Carbon
  - d) none of the above
59. Dimensions of electromotive force are
  - a) MLQ
  - b)  $ML^2T^{-2}$
  - c)  $ML^2Q^{-2}$
  - d)  $ML^2T^{-2}Q^{-1}$
60. Bodies appear \_\_\_\_\_ when immersed in a liquid.
  - a) increased
  - b) same
  - c) lighter
  - d) none of these

50. A    51. A    52. A    53. C    54. B    55. B  
56. A    57. C    58. B    59. D    60. C



61. Which of the following is used for repairing watches?  
 a) simple microscope      b) astronomical telescope  
 c) compound microscope    d) concave lens
62. When fundamental note is formed in an open organ pipe, \_\_\_\_\_ is formed in the middle.  
 a) antinode                      b) node  
 c) resonance                    d) frequency
63. Nernst Glows and Globes are the most artificial sources of \_\_\_\_\_ rays.  
 a) Ultraviolet                    b) Beta  
 c) Infrared                        d) Gamma
64. Thermal capacity is equal to  
 a) mass + specific heat capacity  
 b) mass - specific heat capacity  
 c) mass / specific heat capacity  
 d) mass  $\times$  specific heat capacity
65. Compound microscope is used  
 a) by water repairers            b) by palmists  
 c) in medical field                d) in agriculture
66. The sun gives out absorption spectrum because of  
 a) photosphere                    b) heat  
 c) ionosphere                      d) light
67. Perfect black body is one which  
 a) absorbs and emits radiations of all wavelengths  
 b) will not absorb any radiation  
 c) will not emit any radiation  
 d) will conduct heat
68. In a dynamo, \_\_\_\_\_ energy is converted into \_\_\_\_\_ energy.  
 a) electrical, mechanical        b) mechanical, electrical  
 c) electrical, physical            d) sound, electrical
69. Who was the first to apply the kinetic theory of matter?  
 a) Bernoulli                        b) Regnault  
 c) Boyle                              d) Charles
70. In a closed organ pipe \_\_\_\_\_ is formed at the closed end and \_\_\_\_\_ is formed at the open end.  
 a) node; antinode                b) antinode; node  
 c) vibration; oscillation        d) oscillation; vibration

---

61. A	62. B	63. C	64. D	65. C	66. A
67. A	68. B	69. A	70. A		

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71. A magnetic field can be represented by a number.  
a) True                                      b) False  
c) It is represented by permeability  
d) It is represented by the size of the magnet
72. No star more than 1.4 times the mass of the sun could become a "white dwarf" by the "normal process". This has been proved by  
a) Strassman                                  b) Otto Hahn  
c) Chandrasekar                              d) Bacquerel
73. Weight of body is equal to the  
a) mass of body  
b) acceleration due to gravity of body  
c) product of mass and height  
d) product of mass and acceleration due to gravity
74. For a normal person, the least distance, at which the objects are clearly seen is  
a) 20 cm                                        b) 10 cm  
c) 15 cm                                        d) 25 cm
75. Unit of wavelength is  
a) kg    b) metre  
c)  $\text{Ms}^{-1}$     d) second
76. The refractive index of water is  
a) 1.51    b) 2.13  
c) 1.33    d) 2.23
77. We receive heat energy from the sun by the process of  
a) refraction                                    b) radiation  
c) conduction                                  d) reflection
78. In \_\_\_\_\_, electrical energy is converted into light energy.  
a) a battery                                      b) an electric bulb  
c) a loudspeaker                                d) dynamo
79. Henry metre<sup>-1</sup> is the unit of  
a) magnetic moment                          b) permeability  
c) field intensity                                d) pole strength
80. In telephone, the speech wave is converted into \_\_\_\_\_ in the mouthpiece.  
a) sound energy                                b) electrical pulses  
c) electrical frequency                        d) thermo energy

71. A    72. C    73. D    74. D    75. B    76. C  
77. B    78. B    79. B    80. B

81. Radio-iodine is used in the treatment of  
 a) coronary heart disease    b) cancer in lung  
 c) stroke    d) thyroid cancer
82. Potential energy is the product of  
 a) mass of body and height  
 b) weight of body and height above ground  
 c) mass and acceleration due to gravity  
 d) height and acceleration due to gravity
83. Specific heat capacity of water is  
 a)  $2090 \text{ J Kg}^{-1} \text{ K}^{-1}$     b)  $4190 \text{ J Kg}^{-1} \text{ K}^{-1}$   
 c)  $1964 \text{ J Kg}^{-1} \text{ K}^{-1}$     d)  $670 \text{ J Kg}^{-1} \text{ K}^{-1}$
84. Red Shift in stars is due to  
 a) Doppler effect    b) Raman effect  
 c) Newton effect    d) none of the above
85. Intensity of light is due to  
 a) super position of two waves  
 b) Doppler effect  
 c) diffraction    d) speed
86. A prism which acts as polariser and analyser is  
 a) glass prism    b) rocksalt prism  
 c) liquid prism    d) nickel prism
87. The unit of inductive reactance of AC circuit is  
 a) Ohm    b) Volt  
 c) Ampere    d) Moho
88. X-rays cannot be focussed using  
 a) mirrors    b) lenses  
 c) wood    d) light
89. In an electric motor, \_\_\_\_\_ energy is converted into mechanical energy.  
 a) nuclear    b) electrical  
 c) potential    d) kinetic
90. The intermolecular attraction in solids is  
 a) low    b) the greatest  
 c) nil    d) fairly good
91. Hydraulic brakes in automobiles work on  
 a) Archimedes' principle    b) Pascal's principle  
 c) Bernoulli's principle    d) Poiseuille's principle

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81. D	82. B	83. B	84. A	85. A	86. A
87. A	88. A	89. B	90. B	91. B	

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92. The frequency of a tuning fork can be determined by a  
 a) magnetic tape                      b) modulator  
 c) sonometer                          d) reed instrument
93. In a telephone, the mouth is based on the principle of \_\_\_\_\_  
 and the ear piece is based on the principle of \_\_\_\_\_.  
 a) microphone; loudspeaker  
 b) loudspeaker; microphone  
 c) microphone; frequency  
 d) frequency; microphone
94. The natural elements whose atomic number is greater than \_\_\_\_\_  
 are radioactive.  
 a) 52                                      b) 62  
 c) 72                                      d) 82
95. The ability to see the nearer objects clearly and inability to  
 see distant objects clearly is known as  
 a) cataract                              b) short sight  
 c) long sight                            d) Hypermetropia
96. White light is a light of  
 a) different frequencies              b) single frequency  
 c) different wavelengths              d) single wavelength
97. Two types of transformers are  
 a) step-up and step-down            b) small and big  
 c) first and second                    d) simple and complicated
98. In a microphone, sound energy is converted into \_\_\_\_\_ energy.  
 a) chemical                              b) mechanical  
 c) electrical                              d) kinetic
99. \_\_\_\_\_ is used in the construction of hydrometers.  
 a) Charles' Law                        b) Boyle's Law  
 c) Law of floatation                    d) Ampere's Law
100. The position of the object in a compound microscope is  
 a) between  $F$  &  $2F$                     b) beyond  $2F$   
 c) at  $2F$                                     d) at  $F$
101. According to Coulomb's law, force between the poles is \_\_\_\_\_  
 the product of their pole strengths.  
 a) directly proportional to            b) indirectly proportional to  
 c) greater than                          d) lesser than

---

92. C	93. A	94. D	95. B	96. C	97. A
98. C	99. C	100. A	101. A		

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102. In Fleming's right hand rule, the middle finger represents the direction of  
 a) motion of conductor      b) magnetic field  
 c) induced current      d) electric field
103. Gamma rays are used in the study of  
 a) welding defects of pipelines  
 b) thickness of thin sheets of lead  
 c) structure of fossils and rocks  
 d) structure and properties of atomic nuclei
104. UV radiations are used in the treatment of tumours; they are also used in certain type of skin infections and bone diseases.  
 a) partly true      b) both are true  
 c) both are false      d) partly incorrect
105. The process of change from one state to another at constant temperature is called  
 a) Vapourisation      b) Solidification  
 c) Change of state      d) Latent heat
106. \_\_\_\_\_ sublimates.  
 a) water      b) ice  
 c) camphor      d) vapour
107. On the basis of the transverse nature of light, Fresnel explained the phenomenon of  
 a) interference      b) diffraction  
 c) polarisation      d) velocity
108. The efficiency of a transformer is  
 a) output power/input power  
 b) input power/output power  
 c) input voltage/output voltage  
 d) output voltage/input voltage
109. In the case of mutual induction, the emf is induced in the  
 a) primary coil      b) secondary coil  
 c) coil      d) speed
110. Diffraction is due to light  
 a) entering a different medium  
 b) reflection      c) scattering  
 d) bending round the corner

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102. C	103. D	104. B	105. C	106. C	107. C
108. C	109. B	110. D			

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111. The value of absolute zero is  
 a)  $273^{\circ}\text{C}$  b)  $0^{\circ}\text{C}$   
 c)  $-273^{\circ}\text{C}$  d)  $100^{\circ}\text{C}$
112. Pipe instrument with reed is  
 a) Flute b) Harmonium  
 c) Nathaswaram d) Trumpet
113. \_\_\_\_\_ discovered the magnetic effect of current.  
 a) Oersted b) Faraday  
 c) Fleming d) Ampere
114. Barium and krypton are \_\_\_\_\_  
 a) obtained by nuclear fusion  
 b) obtained by nuclear fission  
 c) lower atomic weight elements  
 d) both (b) and (c)
115. Beta particle is  
 a) positively charged b) negatively charged  
 c) chargeless d) the smallest particle
116. A body when immersed in a liquid experiences an upward thrust equal to the weight of the liquid displaced by it. This is  
 a) Newton's law of motion b) Law of flotation  
 c) Archimedes' principle d) None of these
117. \_\_\_\_\_ is not a wind instrument.  
 a) Flute b) Trumpet  
 c) Harmonium d) Veena
118. Highly intense concentrated parallel beam of monochromatic light is produced by  
 a) ELISA b) LASER  
 c) X - rays d) UV- rays
119. Measurement of high temperature is called  
 a) Thermal radiation b) Pyrometry  
 c) Thermodynamics d) Thermometry
120. Half life period of carbon -14 is  
 a) 5600 years b) 5800 years  
 c) 5600 days d) 6000 years
121. The weight of the floating body is \_\_\_\_\_ to the weight of the liquid displaced.  
 a) more b) less  
 c) cannot be determined d) equal

111. C	112. C	113. A	114. D	115. B	116. C
117. D	118. B	119. A	120. B	121. D	

122. D    123. B    124. A    125. C    126. A    127. B  
128. B    129. B    130. D    131. D

132. \_\_\_\_\_ rays are used to sterilize rooms where drugs and vaccines are produced.
- a) infra red                      b) ultra violet  
c) gamma                        d) cosmic
133. A plant with green leaves placed in red light will appear
- a) black                            b) green  
c) red                                d) violet
134. Electromagnetic radiation is emitted by
- a) X-ray                            b) electrons  
c) ultrasonic                      d) protons
135. Steel is more elastic than rubber because
- a) Its density is high              b) It is a metal  
c) Ratio of stress to strain is more  
d) Ratio of stress to strain is less
136. When ice melts in a beaker of water, the level of water in the beaker will
- a) increase                        b) decrease  
c) remain the same  
d) first increase and then decrease
137. Metals are good conductors of electricity, because
- a) they contain free electrons  
b) the atoms are lightly packed  
c) they have high melting point  
d) all of the above
138. When iron and wood are exposed to sunlight, the iron rod becomes hot quickly because of
- a) greater thermal conductivity of iron  
b) lower thermal conductivity of iron  
c) more density of iron  
d) less density of iron
139. In diesel engines, ignition takes place by
- a) compression                      b) electric spark  
c) dynamo                            d) battery
140. What is the approximate velocity of sound in air?
- a) 3 m/s                                b) 30 m/s  
c) 300 m/s                              d) 3000 m/s

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132. B    133. A    134. B    135. C    136. C    137. A  
138. A    139. A    140. C

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141. B 142. C 143. A 144. C 145. A 146. C  
147. B 148. B



149. The Raman Effect is used in the study of
  - a) x-rays
  - b) cells
  - c) chromosomes
  - d) molecular energy
150. A molecule is
  - a) a class of organic compounds
  - b) the smallest unit of a substance that retains the properties of the substance
  - c) a small mass
  - d) the spectrum of a substance
151. The nucleus of an atom consists of
  - a) protons + electrons
  - b) only protons
  - c) protons + neutrons + electrons
  - d) protons and neutrons
152. A solid needle placed horizontally on the surface of the water floats due to
  - a) surface tension
  - b) capillary action
  - c) cohesion
  - d) adhesion
153. Effect of light on photocells produces
  - a) energy
  - b) current
  - c) photosynthesis
  - d) none of these
154. A 100 Watt bulb is kept on for a period of 10 hours per day in the month of September. The electrical energy consumed in that month in Kilowatt hours (Kwh) is
  - a) 30 Kwh
  - b) 3 Kwh
  - c) 3000 Kwh
  - d) 100 Kwh
155. Which of the following is a good conductor of heat but bad conductor of electricity?
  - a) asbestos
  - b) celluloid
  - c) pertex
  - d) mica
156. If the distance between two charges is halved, then the force between them becomes
  - a) half
  - b) double
  - c) four times
  - d) one-fourth
157. To increase the magnifying power of a telescope, the focal length of
  - a) objective lens should be increased
  - b) objective lens should be decreased
  - c) eye-piece lens should be increased
  - d) eye-piece lens should be decreased

149. D    150. B    151. D    152. A    153. B    154. A  
155. D    156. C    157. D

158. An object moving around in a circle is moving with
  - a) uniform velocity
  - b) uniform speed
  - c) variable velocity
  - d) variable speed
159. When water is heated from  $0^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ , the volume of water
  - a) increases steadily
  - b) decreases steadily
  - c) first increases then decreases
  - d) first decreases then increases
160. Which of the following pairs is incorrect?
  - a) Atom : smallest indivisible part of element
  - b) Molecule : unit of a compound
  - c) Atom : smallest part of a compound
  - d) Atom : indivisible particle
161. The element used in an electric filament is
  - a) copper
  - b) aluminium
  - c) iron
  - d) tungsten
162. The molecular weight of a substance can be calculated by measuring
  - a) density in liquid state
  - b) vapour density
  - c) freezing point
  - d) vapour pressure
163. Mercury is commonly used as a thermometric fluid rather than water because
  - a) specific heat of mercury is less than water
  - b) specific heat of mercury is more than water
  - c) mercury has greater visibility than water
  - d) density of mercury is more than water
164. When a stone is dropped in a well, the splash is heard after 1.5 seconds after the stone hits the water surface. If the velocity of sound is  $327\text{ m/s}$ , the depth of the well is
  - a) 227 m
  - b) 490.5 m
  - c) 660 m
  - d) 981 m
165. A magnetic field does not interact with
  - a) stationary charge
  - b) moving charge
  - c) stationary permanent magnets
  - d) moving permanent magnets
166. The critical angle of a glass slab increases with
  - a) increase in the refractive index of glass
  - b) decrease in the refractive index of glass
  - c) increase in temperature
  - d) none of these

158. C    159. D    160. A    161. D    162. B    163. C  
 164. B    165. A    166. B

167. Cosmic rays  
 a) are charged particles  
 b) are uncharged particles  
 c) can be charged as well as uncharged  
 d) none of these
168. Rectifiers are used to convert  
 a) DC to AC  
 b) AC to DC  
 c) high voltage to low voltage  
 d) low voltage to high voltage
169. The terminal colours of the rainbow are  
 a) violet and red  
 b) violet and green  
 c) red and green  
 d) red and blue
170. Rate of evaporation does not depend upon  
 a) temperature of the liquid  
 b) surface area of the liquid  
 c) total mass of the liquid  
 d) air pressure
171. The best conductor of electricity is  
 a) iron  
 b) aluminium  
 c) copper  
 d) silver
172. The normal boiling point of a liquid is the temperature at which  
 a) the vapour pressure of the liquid is zero  
 b) the vapour pressure of the liquid is standard pressure  
 c) the density of the liquid is unity  
 d) the vapour pressure of the liquid is equal to the atmospheric pressure
173. The shining particles seen in the path of beam from a projector in cinema hall is due to  
 a) shining particles emanating from projector  
 b) scattering of light by dust particles in the path of the light  
 c) Brownian movement of the dust  
 d) electrical properties of dust particles
174. What happens to the equivalent conductance of an electrolyte on dilution?  
 a) Decreases  
 b) Increases  
 c) Remains constant  
 d) May increase or decrease depending on the electrolyte

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167. C    168. B    169. A    170. C    171. D    172. D  
 173. C    174. D

---

**175. Choke is used to**

- a) reduce the current in AC circuit
- b) reduce the current in DC circuit
- c) convert AC to DC
- d) convert DC to AC

**176. Piezo-electric effect is exhibited by**

- a) diamond
- b) quartz
- c) carbon
- d) iron

**177. The substance used in the manufacture of high voltage insulators is**

- a) Natural rubber
- b) Silicones
- c) Silicon carbide
- d) Synthetic rubber

**178. "Decibel" is a unit of**

- a) Sound Intensity
- b) Light
- c) Heat
- d) Electricity

**179. Ball-point pen works on the principle of**

- a) Viscosity
- b) Boyle's law
- c) Gravitational force
- d) Capillarity and surface tension

**180. At what temperature a body will not radiate any heat energy?**

- a)  $0^{\circ}\text{C}$
- b)  $273^{\circ}\text{C}$
- c)  $100^{\circ}\text{C}$
- d)  $-273^{\circ}\text{C}$

**181. In a standing wave, the distance between a node and adjacent antinode is**

- a)  $\frac{3\lambda}{2}$
- b)  $\frac{\lambda}{2}$
- c)  $\frac{\lambda}{4}$
- d)  $\frac{3\lambda}{4}$

**182. A telescope and a microscope differ in that**

- a) both are different instruments
- b) telescope has eyepiece with larger focal lengths than the objective
- c) telescope has objective of large focal lengths and eyepiece of smaller focal lengths
- d) none of these

---

175. A    176. B    177. B    178. A    179. D    180. D  
181. B    182. B

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**191. Particles which can be added to the nucleus of the atom without changing its chemical properties are**

- |              |              |
|--------------|--------------|
| a) electrons | b) protons   |
| c) neutrons  | d) positrons |

**192. 'Light Year' is a unit of**

- |         |             |
|---------|-------------|
| a) time | b) distance |
| c) mass | d) gravity  |

**193. Raman effect involves**

- |                          |                        |
|--------------------------|------------------------|
| a) interference of light | b) scattering of light |
| c) diffraction of light  | d) all the above       |

**194. No two electrons will have all the four quantum numbers equal.**

**This statement is known as**

- |                                |                         |
|--------------------------------|-------------------------|
| a) Uncertainty principle       | b) Quantum principle    |
| c) Pauli's exclusion principle | d) Avogadro's principle |

**195. The emission of a  $\beta$ -particle in radioactivity**

- |                                       |
|---------------------------------------|
| a) increases the atomic number by one |
| b) decreases the atomic number by one |
| c) increases the mass number by one   |
| d) decreases the mass number by one   |

**196. Match List-I correctly with List-II and select your answer using the codes given below:**

**List-I (Physical quantity)**

**List-II (Units)**

- |                        |           |
|------------------------|-----------|
| A) Electrical capacity | 1. Ohm    |
| B) Electric current    | 2. Farad  |
| C) Electromotive force | 3. Ampere |
| D) Electric resistance | 4. Volt   |

**Codes:**

- |    |          |          |          |          |
|----|----------|----------|----------|----------|
|    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
| a) | 1        | 3        | 2        | 4        |
| b) | 2        | 3        | 4        | 1        |
| c) | 2        | 4        | 1        | 3        |
| d) | 3        | 2        | 1        | 4        |

**197. Which one of the following is correctly matched?**

- |                                    |                      |
|------------------------------------|----------------------|
| a) Astigmatism                     | - Defect in the lens |
| b) Cataract                        | - Convex lens        |
| c) Hypermetropia(long-sightedness) | - Cylindrical lens   |
| d) Myopia(short-sightedness)       | - Concave lens       |

- 
- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 191. B | 192. B | 193. B | 194. C | 195. A | 196. B |
| 197. D |        |        |        |        |        |
-



198. Consider the following statements:

**Assertion (A) :** The velocity of sound in solids is generally greater than that in gases.

**Reason (R) :** The density of solids is more than that of gases.

- a) Both (A) and (R) are true, (R) is the correct explanation of (A)
- b) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- c) (A) is true, but (R) is false
- d) (A) is false, but (R) is true

199. The acceleration due to gravity increases with

- a) the increase in altitude      b) the decrease in altitude
- c) no change in altitude      d) none of these

200. In a wave motion, nodes are the points where the displacement of particles of the medium with respect to the mean position is

- a) maximum      b) minimum
- c) zero      d) moderate

201. If a bimetallic strip is heated, it will

- a) twist itself into a helix      b) not bend at all
- c) bend towards the metal with higher thermal coefficient of expansion
- d) bend towards the metal with lower thermal coefficient of expansion

202. If the pressure is increased at constant temperature, the velocity of sound in a gas

- a) increases      b) decreases
- c) is unaffected      d) is changed

203. Which of the following is wrong?

a)  $\text{Stress} = \frac{\text{force}}{\text{area}}$       b)  $\text{Strain} = \frac{\text{force}}{\text{area}}$

c)  $\text{Young's modulus} = \frac{\text{stress}}{\text{strain}}$

d)  $\text{Pressure} = \frac{\text{thrust}}{\text{area}}$

198. B    199. A    200. C    201. C    202. B    203. B

204. Fraunhofer lines are evidence of  
 a) the complete absence of certain elements in the Sun  
 b) the absence of certain elements in the Sun's surface  
 c) the presence of certain elements in the Sun's surface layer  
 d) the presence of certain elements in the interior of the Sun
205. Materials which rotate the plane of polarisation of light are called  
 a) optically selective                      b) polarisers  
 c) optically active                         d) analysers
206. The energy equivalent of a.m.u. is  
 a) 931 MeV                                      b) 13.6V  
 c) 913 MeV                                      d) less than 900 MeV
207. RC coupled amplifier is used in  
 a) current amplification                      b) voltage amplification  
 c) power amplification                       d) none of these
208. Curie point is the temperature at which  
 a) ferromagnetic material becomes paramagnetic  
 b) paramagnetic material becomes ferromagnetic  
 c) paramagnetic material becomes diamagnetic  
 d) ferromagnetic material becomes diamagnetic
209. The source of solar energy is  
 a) nuclear fission                              b) nuclear fusion  
 c) sinking of the Sun                         d) none of these
210. When a vehicle passes, TV reception gets distorted due to  
 a) metal reflecting radio waves  
 b) spark plug creating electromagnetic disturbances  
 c) passing vehicle affecting TV components  
 d) use of electronic ignition system
211. The escape velocity of a projectile from the earth is approximately  
 a) 7 km/s    b) 11.2 km/s  
 c) 1.2 km/s                                        d) 21.2 km/s
212. Why do rain-bearing clouds look black?  
 a) All light is scattered by them  
 b) They reflect the sunlight back into the atmosphere  
 c) The large number of water droplets in them absorb all the sunlight  
 d) There is a lot of dust condensed on the water vapour in these clouds

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204. C	205. C	206. A	207. B	208. B	209. B
210. B	211. B	212. A			

---

213. Match *List-I* with *List-II* correctly and select your answer using the codes given below:

*List-I*

- A) Hard Disk
- B) UNIX
- C) Compiler
- D) Artificial Intelligence

*List-II*

- 1. Software
- 2. 5th Generation of Computers
- 3. Operating system
- 4. Storage device

**Codes:**

	A	B	C	D
a)	1	3	2	4
b)	3	4	1	2
c)	4	3	1	2
d)	4	1	2	3

214. Sound waves in air are

- a) transverse waves
- b) longitudinal waves
- c) may be both types
- d) none of these

215. Penetrating power is greater in the case of

- a)  $\alpha$ -ray
- b)  $\beta$ -ray
- c)  $\gamma$ -ray
- d) X-ray

216. The densities of three liquids are D, 2D and 3D. What will be the density of the resulting mixture, if equal volume of the three liquids are mixed?

- a) 6D
- b) 1.4D
- c) 2D
- d) 3D

217. The ozone layer protects us from

- a) ultraviolet rays
- b) radiowaves
- c) visible radiation
- d) infrared radiation

218. Consider the following statements :

**Assertion (A) :** Electric power is transmitted over long distance through conducting wires of very low voltages.

**Reason (R) :** Then only the power can be supplied to the individual houses.

**Now select the correct answer according to the coding scheme given below :**

- a) Both A & R are true but R is not the correct explanation of A
- b) Both A & R are true and R is the correct explanation of A
- c) Both A and R are false
- d) A is true, but R is false

213. C    214. B    215. C    216. C    217. A    218. A

**219. Consider the following statements :**

**Assertion (A) :** An athlete runs same distance before taking a long jump.

**Reason (R) :** It helps him to apply a large force.

**Now select the correct answer according to the coding system given below :**

- a) A is true, but R is false      b) Both A and R are false
- c) Both A & R are true but R is not the correct explanation of A
- d) A is false, but R is true

**220. Which one of the following is not correctly matched?**

- a) A cycle wheel is fitted with spokes - because it increases the strength of the wheel
- b) It is easy to draw a wooden-block along an inclined plane than to raise it vertically - because only a part of weight is to be overcome
- c) In the evening, when the sun goes below the horizon, it is visible for some time - because the air near the earth's surface is denser than that in the upper atmosphere
- d) A man in a lift will weigh more - when the lift accelerates upwards

**221. Which one of the following is not correctly matched?**

- a) Kilowatt-hour - Energy
- b) Celsius - Name of a king
- c) Balance wheel in watch - Invar
- d) Newton - Force

**222. Which one of the following is correctly matched?**

- a) Burning glass - convex mirror
- b) Dentist's mirror - cylindrical mirror
- c) Motorist's mirror for rear view - concave mirror
- d) Headlamps of cars - parabolic concave mirror

**223. Which of the following is correctly matched?**

- a) Hydraulic press - Archimedes' principle
- b) Lift of airplane - Bernoulli's principle
- c) Paint-Gun - Newton's third law
- d) Electron microscope - Refraction of electron waves

219. C    220. C    221. B    222. B    223. C

**224. Match List I correctly with List II and select your answer using the codes given below:**

**List I**

- A) Exosphere
- B) Magnetosphere
- C) Photosphere
- D) Stratosphere

**List II**

- 1. Space surrounding the earth or any celestial body
- 2. Earth's atmosphere about 400 km above the earth's surface
- 3. Earth's atmosphere about 11 km above the earth's surface
- 4. Visible portion of the Sun

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 2 | 1 | 4 | 3 |
| c) | 4 | 1 | 2 | 3 |
| d) | 1 | 4 | 3 | 2 |

**225. Four electromagnetic waves of different wavelengths (X-rays, Microwaves, Ultraviolet, Infrared) are given.**

**Their correct arrangement in the descending order of wavelength is**

- a) X-ray, Ultraviolet, Infrared and Microwaves
- b) Microwaves, Infrared, Ultraviolet and X-rays
- c) Ultraviolet, Infrared, X-rays and Microwaves
- d) Microwaves, X-rays, Infrared and Ultraviolet

**226. Which one of the following is not correctly matched?**

- a) Actinometer - For measuring the intensity of electro-magnetic radiation
- b) Dynamometer - For measuring current
- c) Anemometer - For measuring the speed or velocity of wind
- d) Atmometer - For measuring the rate of evaporation of water

**227. Which one of the following is correctly matched?**

- a) Quarks - A kind of crystal
- b) Venus - Brightest planet in the night sky
- c) Nucleon - Proton and electron
- d) Maser - A powerful source of heat

224. B    225. B    226. B    227. D

228. Match List I correctly with List II and select your answer using the codes given below :

- List I**
- A) Goniometer
- B) Hypsometer
- C) Manometer
- D) Pyknometer

- List II**
1. apparatus for determining the boiling point of liquids
  2. apparatus for measuring pressure of a gas
  3. apparatus for measuring density of liquids
  4. apparatus for measuring angles

**Codes:**

- |    | a | b | c | d |
|----|---|---|---|---|
| a) | 4 | 1 | 2 | 3 |
| b) | 1 | 4 | 3 | 2 |
| c) | 1 | 2 | 3 | 4 |
| d) | 2 | 1 | 4 | 3 |

229. Match List I correctly with List II and select your answer using the codes given below:

- | <b>List I</b>                                | <b>List II</b>  |
|--|-----------------|
| A) Nuclear model of an atom                  | 1. J.J. Thomson |
| B) Empirical atomic model                    | 2. Niels Bohr   |
| C) Elliptical orbits of electrons in an atom | 3. Rutherford   |
| D) Model of Hydrogen atom                    | 4. Sommerfeld   |

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 3 | 2 | 4 |
| b) | 1 | 2 | 3 | 4 |
| c) | 2 | 1 | 4 | 3 |
| d) | 3 | 1 | 4 | 2 |

230. Atom bomb is based on the principle of

- |                      |                    |
|----------------------|--------------------|
| a) Nuclear fusion    | b) Nuclear fission |
| c) Chemical reaction | d) none of these   |

231. When a wave goes from one place to another, it transports

- |           |            |
|-----------|------------|
| a) Matter | b) Energy  |
| c) Mass   | d) Nothing |

---

228. A    229. D    230. B    231. B

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232. A 100 watt bulb will consume one unit of electrical energy in
- 1 hour
  - 10 hours
  - one day
  - 60 hours

233. In an electric bulb, a little nitrogen or argon is introduced at low pressure to

- cool the hot filament
- withstand atmospheric pressure
- prevent evaporation of the element
- increase brightness of the filament

234. An artificial satellite can be tracked very precisely from the earth by using

- Doppler effect
- Radar
- Sonar
- Zeeman effect

235. Consider the following statements:

**Assertion (A) :** In an electric bulb, the filament is in the form of a coiled coil.

**Reason (R) :** A coiled coil filament occupies less space and is therefore, not cooled significantly by the convection currents in the bulb.

- Both A & R are true and R is the correct explanation of A.
- Both A & R are true but R is not the correct explanation of A.
- A is true, but R is false
- A is false, but R is true

236. Match *List-I* correctly with *List-II* and select your answer using the codes given below:

**List-I**

- Range of Audio frequency
- Range of A.C. frequency
- Range of Radio frequency
- Range of TV frequency

**List-II**

- Kilo Hz
- 20 Hz
- Mega Hz
- 50 Hz

**Codes:**

- |    | a | b | c | d |
|----|---|---|---|---|
| a) | 3 | 2 | 4 | 1 |
| b) | 2 | 4 | 1 | 3 |
| c) | 1 | 4 | 2 | 3 |
| d) | 3 | 1 | 4 | 2 |

---

232. B    233. B    234. A    235. C    236. B

---

237. On adding a little antimony to germanium, we get  
 a) *p*-type semiconductor      b) *n*-type semiconductor  
 c) Metallic conductor      d) Intrinsic semiconductor
238. Hydrogen bomb is based on the principle of  
 a) Nuclear fission      b) Nuclear fusion  
 c) Nuclear explosion      d) Electrochemical reaction
239. Which one of the following is correctly matched?  
 a) Radar - to measure the intensity of radiation  
 b) Pulsar - to measure the pulse of human beings  
 c) Sonar - for locating the submerged objects  
 d) Quasar - to measure the energy of a quantum
240. Which of the following waves/rays are produced by nuclear changes in the atom?  
 a) Infra-red rays      b) Light waves  
 c) X-rays      d)  $\gamma$ -rays
241. Artificial satellites are used for  
 a) TV transmission      b) detecting minerals  
 c) space research      d) all of the above
242. The minimum length of a plane mirror in which a person can see himself full length should be  
 a) equal to the person's height  
 b) slightly more than his height  
 c) nearly half of his height  
 d) nearly one-fourth of his height
243. Match *List-I* with *List-II* and select the correct answer using the codes given below the lists:

*List-I (Scientist)*

- A) George Gamow  
 B) W. Heisenberg  
 C) Bohr and Wheeler  
 D) C. Huygens

*List-II (Theory)*

- 1) Theory of Nuclear Fission  
 2) Big Bang Theory  
 3) Wave Theory of Light  
 4) Quantum Theory of Matter

*Codes:*

	A	B	C	D
a)	2	4	3	1
b)	1	3	2	4
c)	2	4	1	3
d)	3	2	4	1

237. D    238. B    239. C    240. D    241. D    242. D  
 243. C

- 244.** If you walk towards a plane mirror at a speed of  $10\text{ cm/s}$ , at what speed does your image approach you?

- a) 5 cm/s                      b) 10 cm/s  
c) 20 cm/s                    d) information inadequate

- 245. The normal temperature of human body on the Kelvin scale is**

- a) 280      b) 290  
c) 310      d) 340

- 246. Consider the following statements:**

**Assertion (A) :** Heavy water ( $D_2O$ ) could speed up the eradication of polio and other viral diseases

**Reason (R)** : It could help by protecting polio vaccine from the effects of tropical heat since it helps vaccines to keep cool.

**Now select the answer according to the coding scheme given below:**

- a) Both A and R are true and R is the correct explanation of A  
b) Both A and R are true, but R is not the correct explanation of A  
c) A is true, but R is false      d) A is false, but R is true

- 247. Consider the following statements:**

**Assertion (A) :** The relay satellite transmits the TV programme continuously from one part of the world to another.

**Reason (R)** : Its period is less than the period of rotation of the earth.

Now select the answer according to the coding scheme given below:

- a) A is false but R is true  
b) Both A and R are true, but R is not the correct explanation of A  
c) Both A and R are false      d) A is true, but R is false

- 248. Consider the following statements:**

**Assertion (A) :** A man inside an artificial satellite feels weightlessness.

**Reason (R)** : The force of attraction due to the earth is equal to the centripetal force.

**Now select the answer according to the coding scheme given below:**

- a) A is true, but R is false      b) A is false, but R is true  
c) Both A and R are true and R is the correct explanation of A  
d) Both A and R are true, but R is not the correct explanation of A

244. B    245. C    246. D    247. D    248. B

249. The phenomenon which cannot be explained by wave theory is  
 a) reflection                      b) refraction  
 c) photoelectric emission      d) polarisation
250. The size of the atomic nucleus is  
 a)  $10^{-11}\text{m}$                       b)  $10^{-10}\text{m}$   
 c)  $10^{-24}\text{m}$                       d)  $10^{-6}\text{m}$
251. The half-life of a radioactive sample is 20 minutes. The fraction of the sample that will remain undecayed after 80 minutes is  
 a)  $\frac{1}{16}$                                   b)  $\frac{1}{12}$   
 c)  $\frac{1}{8}$                                       d)  $\frac{1}{4}$
252. Electrons can be accelerated to very high energies by means of  
 a) Thyratrons                      b) Magnetrons  
 c) Betatrons                        d) Cyclotrons
253. Polaroids are used in  
 a) Photo-electric effect          b) Photo-elasticity  
 c) Photo-electric cell            d) Photosynthesis
254. Consider the following statements:  
 Assertion (A) - A simple pendulum experiment cannot be performed in satellite.  
 Reason (R) - The simple pendulum inside the satellite will be in a state of zero gravity.  
 Now select your answer according to the coding scheme given below :  
 a) Both A & R are true and R is the correct explanation of A  
 b) Both A & R are true, but R is not the correct explanation of A  
 c) A is true, but R is false      d) A is false; and R is true
255. The lightning conductor used in buildings protects the building by  
 a) absorbing electric charges  
 b) by dissipating the electric charges away from the building.  
 c) conducting electric charge safely to the ground.  
 d) None of the above

---

249. C    250. A    251. A    252. C    253. B    254. A  
 255. C

---

256. Given below are two statements, one labelled Assertion (A) and the other labelled as Reason (R):

Assertion (A) : Bats can fly in the dark.

Reason (R) : Bats navigate using sound waves.

In the context of the above two statements, which one of the following is correct?

- a) Both A and R are true and R is the correct explanation of A.  
 b) Both A and R are true, but R is not a correct explanation of A.  
 c) A is true but R is false.      d) A is false but R is true.
257. Assertion (A) : When it rains in bright sunshine, a rainbow is observed in the sky opposite to sun.

Reason (R) : White light consists of seven colours.

- a) Both A and R are true and R is the correct explanation of A.  
 b) Both A and R are true, but R is not a correct explanation of A.  
 c) A is true, but R is false      d) A is false, but R is true
258. The correct order of increasing size of particles is
- a) Clay, silt, sand.                      b) Sand, silt, clay.  
 c) Clay, sand, silt.                      d) Sand, clay, silt.

259. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List-I**

- A) Newton  
 B) Watt  
 C) Coulomb  
 D) Joule

**List-II**

- 1) Power  
 2) Force  
 3) Work or energy  
 4) Electric charges

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 2 | 1 | 4 | 3 |
| c) | 4 | 3 | 2 | 1 |
| d) | 3 | 1 | 4 | 2 |

260. Which one of the following shows the masses of the three elementary particles in decreasing order?
- a) Mesons, Baryons, Leptons  
 b) Baryons, Mesons, Leptons  
 c) Leptons, Mesons, Baryons  
 d) Leptons, Baryons, Mesons

256. A    257. A    258. A    259. B    260. B



261. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason(R):

**Assertion (A) :** A white porcelain plate with black design on it is heated to a high temperature. It is then suddenly taken into a dark room. It is observed that the black design appears bright while the porcelain background remains dark.

**Reason (R) :** Good absorbers of heat are good radiators.

**In the context of the above two statements, which one of the following is correct?**

- a) Both A and R are true and R is the correct explanation of A  
b) Both A and R are true, but R is not a correct explanation of A  
c) A is true, but R is false      d) A is false, but R is true
262. For superconductors, at the absolute zero temperature
- a) the electrical resistance becomes zero  
b) the conductance increases with temperature  
c) the conductance decreases  
d) they become insulating
263. The following processes take place during the launching of a rocket.
- I) Rocket fuel is burnt.      II) Gases are produced.  
II) Rocket moves in the forward direction.  
III) Gases come out with a momentum in the backward direction.  
**What is the correct sequential order in which the above occur?**
- a) I, II, IV, III      b) II, I, III, IV  
c) III, IV, II, I      d) III, I, II, IV
264. When the temperature of a liquid increases, the surface tension of the liquid
- a) increases      b) decreases  
c) remains the same  
d) first increases and then decreases.
265. The density of ice is  $900 \text{ kg m}^{-3}$ . What fraction of the volume of a piece of ice will be above water, when floating in fresh water of density  $1000 \text{ kg m}^{-3}$ ?
- a) 0.09      b) 0.10  
c) 0.083      d) 0.97



266. Match List I with List II and select the correct answer by using the codes given below the lists:

**List-I***(Physical quantity)*

- A) Density  
B) Force  
C) Energy  
D) Momentum

**List-II***(Dimensions of the physical quantity)*

- 1)  $MLT^{-2}$   
2)  $ML^{-3}$   
3)  $MLT^{-1}$   
4)  $ML^2T^{-2}$

**Codes:**

	A	B	C	D
a)	3	2	4	1
b)	1	2	3	4
c)	2	1	4	3
d)	3	2	1	4

267. An 80 kg man runs up a staircase of 4 metre in 8 seconds. If the value of acceleration due to gravity is  $10 \text{ m/sec}^2$ , his average power output is

- a) 400 Watts.                      b) 800 Watts.  
c) 1600 Watts.                    d) 3200 Watts.

268. According to Einstein's theory of relativity, when a body moves with a velocity comparable to the velocity of light, its

- a) Length increases but mass decreases  
b) Length decreases but mass increases  
c) Mass and length increase  
d) Mass and length decrease

269. A weight suspended from a spring moves up and down. Which of the following would then be true?

- I. Its acceleration is zero at the midpoint.  
II. Its acceleration is greatest at the end points.  
III. Velocity is minimum where acceleration is zero.

Select the correct answer from the codes given below:

- a) I, II, and III                      b) I and II  
c) I and III                          d) II and III

266. C    267. D    268. D    269. B

**270. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** A hydrogen filled balloon stops rising after it has attained a certain height in the sky.

**Reason(R) :** The atmospheric pressure decreases with height and becomes zero when maximum height is attained

**In the context of the above two statements, which one of the following is correct?**

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not a correct explanation of A.
- c) A is false but R is true.
- d) A is true but R is false.

**271. When the temperature of a gas sample filled in a container is increased, its pressure increases. Which of the following are reasons for it?**

- I. Gas molecules exert more force on each other than before.
- II. Gas molecules move faster than before and strike the walls of the container more often.
- III. Each impact of the gas molecules on the walls of the container yields a greatest force than before.
- IV. Impacts are now distributed over a smaller area.

**Choose the correct answer from the codes given below:**

- a) I, II and III
- b) I, III and IV
- c) II, and IV only
- d) II and III only

**272. Which of the following statements are true regarding heat?**

- I. Heat is a form of energy.
- II. Heat can be reflected by a mirror.
- III. Heat is a electromagnetic radiation.
- IV. Heat cannot pass through vacuum.

**Select the correct answer from the codes given below:**

- a) I, II and III
- b) I, II and IV
- c) II, III and IV
- d) I, III and IV

---

270. C    271. D    272. A

273. The frequency of the tuning fork A is slightly higher than tuning fork B. By sounding them together, beats can be produced. If the fork B is loaded with wax, the frequency of beats will
- increase.
  - decrease.
  - remain the same.
  - become zero.
274. To produce sound, it is necessary that
- the source should execute longitudinal vibrations.
  - the source should execute transverse vibrations.
  - the source may execute any type of vibration.
  - the vibrations of source are not necessary.
275. Which one of the following is the correct arrangement in the decreasing order of the refractive indices of glass, diamond and water?
- Glass, water, diamond.
  - Water, glass, diamond.
  - Diamond, water, glass.
  - Diamond, glass, water.
276. When light passes from air into glass, it experiences change of
- frequency and wavelength
  - frequency and speed
  - wavelength and speed
  - frequency, wavelength and speed
277. Focal length of the objective and eye-piece of a telescope are 100 and 10 cm respectively. Magnification of the telescope, when final image is formed at infinity is
- 0.1
  - 10
  - 100
  - Infinity.
278. Which of the following are true regarding image formations with the help of mirrors?
- A concave mirror can give a diminished virtual image.
  - A concave mirror can give a real image.
  - A convex mirror can give a virtual image.
  - A convex mirror cannot give a real image.
- Select the correct answer from the codes given below:
- I and III
  - I and IV
  - I, III and IV
  - II, III and IV

---

273. A    274. C    275. D    276. C    277. B    278. D

---

280. A parallel air condenser is charged by connecting it to a battery. The battery is disconnected and then a sheet of glass of dielectric constant 8 is inserted between the plates. In this context which of the following would be true?

- I. Potential difference between the plates is reduced by a factor of Eight**

- II. Potential difference between the plates is increased by a factor of Eight.

- III. Electric field between the plates is reduced by a factor of Eight**  
**Select the correct answer from the codes given below:**

**Select the correct answer from the codes given below:**

- a) only III                      b) only II  
c) I and III                      d) II and III

281. If in an electric circuit 30 coulombs of charge flows in 5 seconds, then the current through it is

- a) 5 amp.                      b) 6 amp.  
c) 10 amp.                    d) 180 amp.

282. Which one of the following sequential arrangements of aluminium, germanium and carbon shows them in the correct increasing order of their electrical conductivities?

- a) Aluminium, Germanium, Carbon  
b) Aluminium, Carbon, Germanium  
c) Carbon, Germanium, Aluminium  
d) Germanium, Carbon, Aluminium

283. A laboratory instrument requires the use of 6 Volt, 30 Watt lamp, but the only potential source available is 120 Volt. In this connection which of the following are possible or should be done?

- I. It is possible to connect a resistor in such a way as to permit the proper use of the lamp.

- II. Resistor should be connected in series with the lamp.**

- III. Resistor should have a resistance of 18.**

**Select the correct answer from the codes given below:**

- a) I, II and III      b) I and II  
c) I and III      d) II and III

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284. Which one of the following is the correct sequence in terms of increasing mass?
- Proton, electron, alpha particle, hydrogen atom
  - Electron, proton, hydrogen atom, alpha particle
  - Hydrogen atom, proton, electron, alpha particle
  - Alpha particle, proton, hydrogen atom, electron.
285. When a bucket of water is whirled in a vertical circle fast enough, water does not fall from the bucket in its highest position because
- the centrifugal force is less than the weight of water.
  - the centrifugal force is more than the weight of water
  - water in the highest position of the bucket loses weight.
  - None of these.
286. A number of images of a candle flame can be seen in a thick mirror. The brightest image is
- the first one.
  - the second one.
  - the third one.
  - the last one.
287. A car in motion has to overcome forces of
- inertia and friction.
  - friction and air resistance.
  - rolling friction and air resistance.
  - inertia and air resistance.
288. A girl is swinging on a swing in the sitting position. How will the period of swing be affected if the girl stands up?
- The period will now be longer.
  - The period will now be shorter.
  - The period will not change at all.
  - The period will be longer or shorter depending upon the weight of the girl.
289. A cyclist turns around a curve at 10 km per hour. If he turns at double the speed what happens to the susceptibility to overturn?
- Doubled
  - Halved
  - Unchanged
  - Quadrupled.
290. Friction can be reduced by changing over from
- Sliding to rolling
  - Rolling to sliding
  - Potential energy to kinetic energy
  - Dynamic to static

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284. B    285. B    286. A    287. C    288. B    289. C  
 290. A

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291. What is the natural form of electromagnetic waves?  
 a) Transverse waves                      b) Longitudinal waves  
 c) Both (a) and (b)                      d) None of these
292. A nuclear reactor is a device to produce nuclear energy with the help of  
 a) nuclear fusion                      b) uncontrolled chain reaction  
 c) controlled chain reaction      d) graphite as fuel
293. Why is tungsten metal used for the manufacture of the filament of an electric bulb?  
 a) Because it is a good conductor of electricity  
 b) Because it is economical  
 c) Because it is malleable  
 d) Because it has a very high melting point.
294. If the velocity of a particle is reduced to half of its initial value, then the kinetic energy of the particle will  
 a) get doubled.                      b) become four times.  
 c) reduce to half its original value.  
 d) reduce to one-fourth of its original value.
295. What is the correct sequence of the following in increasing order of their weights?  
 I. One litre of ocean water  
 II. One litre of mercury  
 III. One litre of molten glass  
 IV. One litre of distilled water  
 Choose the correct answer using the codes given below:  
 a) II, III, IV, I                      b) IV, III, II, I  
 c) IV, I, III, II                      d) III, IV, II, I
296. A battery used for charging an air capacitor is removed after the capacitor is fully charged. Some mica sheets (dielectric constant  $K$ ) are inserted between the two plates. If  $E$  is the energy of the air capacitor, then the energy stored in the mica capacitor will be  
 a)  $KE$                       b)  $\frac{1}{K} E$   
 c)  $K^2 E$                       d)  $E$

---

291. A    292. C    293. D    294. B    295. C    296. A

---



297. Which of the following is a result of surface tension?  
 a) Gravitational pull      b) Viscosity  
 c) Capillary action      d) Radiation.
298. If a man approached a plane mirror at the rate of 2 km/hour, then his image would approach him at the rate of  
 a) 1 km/hour      b) 2 km/hour  
 c) 4 km/hour      d) 8 km/hour
299. The tendency of a liquid drop to contract and occupy minimum area is due to  
 a) viscosity.      b) surface tension.  
 c) density.      d) vapour pressure.
300. Which one of the following is a vector quantity?  
 a) Momentum      b) Pressure  
 c) Energy      d) Work.
301. Match *List-I* with *List-II* and select the correct answer using the codes given below the lists:
- | <i>List-I (Physical quantity)</i> | <i>List-II (Unit)</i> |
|-----------------------------------|-----------------------|
| A) Brightness                     | 1) Pascal             |
| B) Momentum                       | 2) Lambert            |
| C) Magnetic intensity             | 3) Kg. m/s            |
| D) Pressure                       | 4) Oersted            |
- Codes:*
- |      | A | B | C | D |
|------|---|---|---|---|
| a) 2 | 1 | 3 | 4 |   |
| b) 2 | 3 | 4 | 1 |   |
| c) 1 | 2 | 4 | 3 |   |
| d) 3 | 2 | 1 | 4 |   |
302. A stone weighing 200 gram weighs 150 grams when immersed in water and 175 grams when immersed in oil. The density of the oil is  
 a) 0.25 g/cc      b) 0.40 g/cc  
 c) 0.50 g/cc      d) 0.75 g/cc
303. If a simple pendulum is taken to the moon, its frequency of vibration will  
 a) remain the same as that on the earth.  
 b) increase.  
 c) decrease.      d) become zero.

---

297. C    298. C    299. B    300. A    301. B    302. B  
 303. C

---

304. A weather forecasting meteorological balloon of volume  $10 \text{ m}^3$  contains hydrogen of density  $0.90 \text{ kg/m}^3$ , and its fabric mass is  $6.5 \text{ kg}$ . If it is floating in air of density  $1.25 \text{ kg/m}^3$ , then the mass of the equipment it carries would be

- a)  $12.5 \text{ kg}$                       b)  $7.4 \text{ kg}$   
c)  $5.1 \text{ kg}$                       d)  $1 \text{ kg}$

305. A steel scale reads correctly at  $0^\circ\text{C}$ . Given that the coefficient of linear expansion of steel is  $12 \times 10^{-6} \text{ K}^{-1}$ , the correction that must be applied to a length of  $25 \text{ m}$  measured by the scale at  $30^\circ\text{C}$  will be

- a)  $0.006 \text{ m}$                       b)  $0.009 \text{ m}$   
c)  $0.007 \text{ m}$                       d)  $0.018 \text{ m}$

306. Match *List-I* with *List-II* and select the correct answer using the codes given below the lists:

<i>List-I</i>				<i>List-II</i>			
<i>(Property)</i>				<i>(Scientist associated with)</i>			
A) Temperature				1) Carnot			
B) Radiation law				2) Joule			
C) Mechanical equivalent of heat				3) Kelvin			
D) Efficiency of heat engines				4) Stefan Boltzman			
A	B	C	D				
a) 3	4	2	1				
b) 3	4	1	2				
c) 2	3	1	4				
d) 2	3	4	1				

307. Consider the following statements:

**Assertion (A) :** The velocity, wavelength and frequency do not undergo any change when a wave is reflected from a surface.

**Reason (R) :** The wave is reflected back into the same medium and hence the velocity remains unaltered. The wavelength does not change as the frequency does not change due to reflection.

Of these statements:

- a) Both A and R are true and R is the correct explanation of A  
b) Both A and R are true, but R is not the correct explanation of A  
c) A is true, but R is false      d) A is false, but R is true.

304. C    305. B    306. A    307. A

308. Consider the following statements:

In a stationary wave

- I. all the particles perform simple harmonic motion with a frequency which is four times that of the two component waves.
- II. particles on the opposite sides of a node vibrate with a phase difference of  $\pi$ .
- III. the amplitude of vibration of a particle at an antinode is equal to that of either component wave.
- IV. all the particles between two adjacent nodes vibrate in phase.

Of these statements:

- a) I and II are correct.
- b) I, III and IV are correct.
- c) II and IV are correct.
- d) I, II, III and IV are correct.

309. A light photon of wavelength 3900 Angstroms passing through a medium of refractive index 1.33 will have a wavelength (in Angstrom units) of

- a) 3000
- b) 4000
- c) 5000
- d) 6000

310. The boundaries of a block of transparent material are found to be completely invisible when placed in a liquid of refractive index  $\mu$ . This is possible only if the refractive index of the material of the block is

- a) greater than  $\mu$ .
- b) equal to  $\mu$ .
- c) less than  $\mu$ .
- d) equal to unity.

311. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I

- A) Germanium
- B) Porcelain
- C) Mho
- D) Coulomb/second

List-II

- 1) Insulator
- 2) Conductance
- 3) Current
- 4) Semiconductor

Codes:

	A	B	C	D
a)	1	4	3	2
b)	4	1	2	3
c)	1	4	2	3
d)	4	1	3	2

308. C    309. A    310. B    311. B

312. Two equal small metal balls are given charges 30 and 60 units respectively. They are then allowed to touch each other and are again separated to the same distance as before. The electrostatic forces between the two balls before and after they touch each other will be in the ratio of

- a) 8 : 1                                      b) 4 : 1  
c) 2 : 1                                      d) 1 : 8

313. There are two wires of the same material and lengths. The cross-sections of the wires are different. If the diameter of the first wire is double that of the second wire, then the specific resistance of the first wire will be

- a) four times that of the second wire.  
b) double that of the second wire.  
c) half of that of the second wire.  
d) same as that of the second wire.

314. Match List-I with List-II and select the correct answer using the codes given below the lists:

<i>List-I</i> (Substance)	<i>List-II</i> (Resistivity in Ohm meter)
A) Copper	1) 2300
B) Constantan	2) $10^{12}$
C) Silicon	3) $1.7 \times 10^{-8}$
D) Glass	4) $4.9 \times 10^{-7}$

Codes:

	A	B	C	D
a)	2	4	3	1
b)	1	3	2	4
c)	3	4	1	2
d)	1	2	4	3

315. Which one of the following sets of the properties are relevant for an electrical fuse wire needed for normal applications?

- a) Thick wire, high melting point alloy, short length.  
b) Thick wire, low melting point alloy, large length.  
c) Short length, low melting point alloy, thin wire.  
d) Large length, low melting point alloy, thin wire.

---

312. A    313. D    314. C    315. C

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316. Consider the following statements regarding a gramophone:

- I. The needle transmits signals to the mica disc electrically.
- II. The needle transmits signals to the mica disc electrically.
- III. Signals cause the mica disc to rotate.
- IV. Signals cause the mica disc to vibrate.

Of these statements:

- a) I and III are correct      b) I and IV are correct.
- c) II and III are correct    d) II and IV are correct.

317. Match List-I (Radiation) with List-II (Order of the wavelength in metres) and select the correct answer using the codes given below the lists:

List-I	List-II
A) Infrared	1) $1 \times 10^{-9}$
B) X-rays	2) $1 \times 10^{-7}$
C) Visible light	3) $5 \times 10^{-7}$
D) Ultraviolet	4) $1 \times 10^{-6}$

Codes:

	A	B	C	D
a)	2	4	1	3
b)	3	1	2	4
c)	4	1	3	2
d)	4	3	1	2

318. Match List I with List II and select the correct answer using the codes given below the lists:

List I (Phenomenon)	List II (Discoverer/ scientist associated with the theory)
A) Explanation of photoelectric effect	1) Max Planck
B) Change of frequency of scattering of visible light	2) Madam Curie
C) Quantum theory of radiation	3) Einstein
D) Law of radio decay	4) Raman

	A	B	C	D
a)	2	3	4	1
b)	4	1	2	3
c)	3	4	1	2
d)	4	2	3	1

316. C    317. C    318. C

**319. Consider the following statements:**

**Assertion (A) :** The density of a solid usually decreases on melting.

**Reason (R) :** The number of nearest neighbours to each molecule in a solid is less than that in a liquid.

**Of these statements:**

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

**320. A line drawn from the sun to a planet, moving around it, sweeps over a fixed area in a given interval of time. This is according to**

- a) Ohm's Law.
- b) Kepler's Law.
- c) Lenz's Law.
- d) Bragg's Law.

**321. Which one of the following will travel fastest in air?**

- a) Sound
- b) Light
- c) Rocket
- d) Supersonic aircraft.

**322. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** In decorative electric lighting, as is commonly used during festival, in marriage pandals, etc., the electric bulbs are connected in a chain using parallel connection.

**Reason (R) :** This enables all the electric bulbs in the chain to draw the same current.

**In the context of the above two statements, which one of the following is correct?**

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not a correct explanation of A.
- c) A is true but R is false.
- d) A is false but R is true.

**323. If a piece of rock is brought from the moon to the Earth, its**

- a) volume, density and weight will remain the same as it was on the moon
- b) volume and weight will remain the same as it was on the moon
- c) density and weight will remain the same as it was on the moon
- d) volume and density will remain the same as it was on the moon

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319. C    320. B    321. B    322. D    323. D

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324. A car travelling in a straight line moves with a uniform velocity  $v_1$  over a distance  $x$  and then with a uniform velocity  $v_2$  over a further distance  $y$ . If  $x=y$ , then the average velocity  $v$  is given by

- a)  $\frac{v_1 + v_2}{2}$                       b)  $\frac{2}{v} = \frac{1}{v_1} + \frac{1}{v_2}$
- c)  $\sqrt{v_1 v_2}$                       d)  $\frac{1}{v} = \frac{1}{v_1} + \frac{1}{v_2}$

325. Consider the following pairs of substances/situations:

I. A piece of teflon on another piece of teflon.

II. A block of ice on another block of ice.

III. Rubber tyre on a wet road.

IV. Rubber tyre on a dry road.

The correct sequence of the decreasing order of their magnitudes of the coefficient of friction is

Codes:

- a) IV, II, II, I                      b) IV, III, I, II
- c) III, IV, II, I                      d) III, IV, I, II

326. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I	List-II
A) Mass $\times$ velocity	1) Work
B) Force $\times$ displacement	2) Power
C) Force $\times$ perpendicular distance of line of action of the force	3) Momentum
D) Force $\times$ velocity	4) Torque

Codes:

	A	B	C	D
a)	1	3	4	2
b)	3	1	2	4
c)	3	1	4	2
d)	1	3	2	4

324. B    325. A    326. B

- a) at  $x = 0$   
b) at  $x = A$   
c) at  $x = A/2$   
d) when  $x$  is greater than  $A/2$  but less than  $A$ .

**The boiling point of water**

- I. can be increased by adding salt to it.
- II. can be increased by increasing the pressure.
- III. is  $100^{\circ}\text{C}$  and can neither be increased nor decreased.

**Of these statements:**

- a) III alone is correct.      b) II alone is correct.  
c) I and II are correct.      d) I alone is correct.

**329. Match List-I with List-II and select the correct answer using the codes given below the lists:**

**List-II**

- A) Inductance**                      **1) Tesla**  
**B) Viscosity**                        **2) Henry**  
**C) Conductance**                  **3) Poise**  
**D) Magnetic flux density.**      **4) Siemens**

**Codes:**

	A	B	C	D
a)	2	3	4	1
b)	3	2	4	1
c)	3	2	1	4
d)	2	3	1	4

**330. The pitch of sound depends upon**

- a) frequency and amplitude    b) frequency alone  
c) the difference in frequencies from two sources  
d) amplitude alone

**331. Monochromatic light of wavelength 600 nm is incident from air on a glass surface whose refractive index is 1.5. The wavelength of refracted light is**

- a) 200 nm                      b) 400 nm  
c) 600 nm                      d) 900 nm

327. C   328. B   329. A   330. B   331. B

332. If a metal is weakly repelled by a magnet, then the metal is expected to be

- a) ferromagnetic.                      b) diamagnetic.  
c) paramagnetic.                      d) non-magnetic.

333. Consider the following statements:

- I. Ohm's law is applicable to all conductors.  
II. The resistance of a pure metallic wire increases with increasing temperature.  
III. The equivalent resistance of a set of resistors joined in parallel is less than the value of the smallest resistor in the set

Of these statements:

- a) I and II are correct.                      b) I and III are correct.  
c) I, II and III are correct.                      d) II and III are correct.

334. A current is flowing in a circular conductor in clockwise direction. The coil is in the plane of the paper. The direction of the magnetic field is

- a) perpendicular to the plane of the paper in the upward direction  
b) perpendicular to the plane of the paper in the downward direction  
c) along the plane of the paper  
d) None of these.

335. The largest voltage one can safely apply across a 50 ohm, 0.5 W resistor is

- a) 5 V    b) 25 V  
c) 100 V    d) 0.01 V

336. Match the following, using the codes given below the lists:

*List-I (Devices)*

*List-II (Principles of working)*

A) Periscope

1) Reflection in two parallel mirrors

B) Safety fuse

2) Archimede's principle

C) Siphon

3) Heating effect of current

D) Balloon

4) Hydrostatic pressure

	A	B	C	D
a)	1	2	3	4
b)	3	4	2	1
c)	1	3	4	2
d)	2	1	4	3

332. B    333. D    334. B    335. B    336. C

337. The ratio of the *rms* value to the peak value of an alternating current is

a)  $\frac{1}{2}$

b)  $\frac{1}{\sqrt{2}}$

c)  $\frac{2}{\sqrt{2}}$

d)  $\frac{1}{2\sqrt{2}}$

338. The wave nature of matter was first discovered by

a) C.V. Raman.

b) Davidson

c) De Broglie

d) G.P. Thompson

339. Match *List-I* with *List-II* and select the correct answer using the codes given below the lists:

*List-I (Scientist)*

*List-II (Work)*

A) X-ray tube

1) Moseley

B) Discovery of X-ray

2) Bragg

C) Concept of atomic number based on characteristic X-ray

3) Coolidge

D) Law of diffraction of X-rays

4) Roentgen

	A	B	C	D
a)	4	3	1	2
b)	3	4	2	1
c)	3	4	1	2
d)	4	3	2	1

340. Who introduced the unit of Horse Power?

a) Newton

b) James Watt

c) Faraday

d) Oppenheimer

341. 'Earth itself is a high magnet' - Who brought this fact to the world?

a) Newton

b) William Gilbert

c) Chandrasekar

d) None of the above

342. Which of the following has the highest surface tension?

a) Mercury

b) Water

c) Alcohol

d) Ether

337. B    338. C    339. C    340. B    341. B    342. B

- 343.** Upon which the function of a loud speaker depends?  
a) Size                                      b) Shape  
c) Size and Shape                      d) None of the above
- 344.** Alternating current cannot be used in  
a) Heating                                  b) Electroplating  
c) Refrigerator                          d) Lighting
- 345.** On which principle does the rocket work?  
a) Conservation of energy    b) Conservation of mass  
c) Conservation of linear momentum  
d) Conservation of angular momentum
- 346.** Which force is used to separate cream out of milk when it is churned?  
a) Centrifugal force                      b) Fractional froce  
c) Centripetal force                      d) Gravitational force
- 347.** Electromagnetic radiation is emitted by  
a) electrons                                b) ultrasonic waves  
c) X-rays                                    d) protons
- 348.** Which one of the following is closely related to viscosity?  
a) Density                                  b) Velocity  
c) Friction                                  d) None of the above
- 349.** What is a thermostat?  
a) An instrument used to regulate the temperature to a particular degree  
b) An apparatus used for observing distant objects  
c) An instrument used for determining speeds of aeroplanes  
d) None of the above
- 350.** Superconductivity was first observed in the year  
a) 1911                                      b) 1955  
c) 1985                                      d) 1995
- 351.** What is the other name for Double Convex Lens?  
a) Convex lens alone                      b) Concave lens  
c) Converging lens                      d) Prism
- 352.** Why does the well-cut diamond appear bright?  
a) It is radioactive                      b) It emits light  
c) Because of total internal reflection  
d) Because of high density

343. C   344. B   345. C   346. A   347. A   348. C  
349. A   350. A   351. C   352. C

- 353. Where is the light source placed in the torch?**  
 a) Focus of a concave mirror  
 b) Pole of a concave mirror  
 c) Radius of curvature of concave mirror  
 d) None of the above
- 354. Which one of the following is the best insulator?**  
 a) Cotton  
 b) Wood  
 c) Paper  
 d) Ebonite
- 355. Greased paper is a**  
 a) Transparent body  
 b) Translucent Body  
 c) An opaque body  
 d) None of the above
- 356. The layer which acts like a blanket in the atmosphere and traps the infrared rays is**  
 a) nitrogen  
 b) oxygen  
 c) carbon-dioxide  
 d) water vapour
- 357. Which one of the following is a scalar quantity?**  
 a) Force  
 b) Velocity  
 c) Acceleration  
 d) Energy
- 358. What is the instrument used to measure radioactivity?**  
 a) Radio micrometer  
 b) Radiograph  
 c) Radio compass  
 d) Geiger counter
- 359. The parts of a machine are mostly made of steel because, it is a/an**  
 a) Elastic Material  
 b) Shining Material  
 c) Plastic  
 d) Brittle
- 360. A car and a loaded truck are moving with the same speed along a road. As compared to the truck, the car shall possess**  
 a) More kinetic energy  
 b) More potential energy  
 c) Less kinetic energy  
 d) More mechanical energy
- 361. What is the reason for formation of less dew on cloudy nights?**  
 a) Clouds absorb the falling dew  
 b) Clouds scatter the moisture  
 c) In cloudy nights, radiation takes place very slowly  
 d) In cloudy nights, radiation takes place very quickly
- 362. The positive charge in a nucleus is known as**  
 a) Proton  
 b) Meson  
 c) Electron  
 d) Neutron

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353. A	354. C	355. B	356. C	357. D	358. D
359. B	360. C	361. B	362. A		

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- 363. Who is the founder of Modern Physics?**  
 a) Rutherford                      b) Einstein  
 c) Newton                          d) Galileo
- 364. In which form does a tape-recorder record the sound?**  
 a) Electrical energy              b) Magnetic fields on the tape  
 c) Variable resistance on the tape  
 d) Sound waves held on the tape
- 365. Corpuscles are nothing but**  
 a) ether particles                  b) electrons  
 c) photons  
 d) perfectly elastic, tiny, weightless particles
- 366. What does an electric bell carry while ringing?**  
 a) Carriers continuous electric current  
 b) Carries no electric current c) Carries intermittent current  
 d) Has a permanent magnet
- 367. Why are cooking utensils made up of metals?**  
 a) because they are good conductors  
 b) because they do not give shock  
 c) because they do not break easily  
 d) because they are good insulators
- 368. Which of the following principles is used in firing of rockets?**  
 a) Boyle's law                      b) Newton's third law of motion  
 c) Newton's law of gravitation  
 d) Kinetic theory of gases
- 369. Which of the following is used as information storage medium in computers?**  
 a) Floppy disk                      b) Oscilloscope  
 c) Microfilm                        d) All the above
- 370. Why does an electrician wear rubber-soled shoes?**  
 a) These are lighter than leather shoes  
 b) These are more durable than leather shoes  
 c) He cannot afford leather shoes  
 d) Rubber is an insulator
- 371. Why is mica used in an electric iron?**  
 a) Good conductor of heat      b) Bad conductor of heat  
 c) Good conductor of electricity  
 d) Bad conductor of electricity

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363. D    364. B    365. D    366. C    367. A    368. B  
 369. A    370. D    371. D

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- 372. Why are white clothes worn more in summer?**  
a) These are thin and cool  
b) These are lesser absorbers of heat than dark clothes  
c) These are easily available in summer  
d) These can be washed easily
- 373. Which of the following does not admit of any division?**  
a) Molecules                      b) Compounds  
c) Atom                              d) All
- 374. Why is snow white?**  
a) It absorbs all the seven colours  
b) It is transparent  
c) It passes through the atmosphere which has no colour  
d) It scatters light and causes diffused reflection
- 375. Why are railway tracks made up of steel?**  
a) Steel is not flexible  
b) Steel does not rust during rains  
c) Steel is strong enough to withstand the weight of carriages  
d) None of the above
- 376. A sprayer works on the principle of**  
a) Boyle                              b) Pascal  
c) Newton                              d) Archimedes
- 377. If 2.00g of hydrogen on burning in 16.0g of oxygen forms 16.0g of water, then which one of the following laws will be violated?**  
a) Law of conservation of mass  
b) Law of constant composition  
c) Law of multiple proportions  
d) Law of reciprocal proportions
- 378. Who was the enunciator of modern atomic theory?**  
a) John Dalton                      b) Rutherford  
c) Faraday                              d) Gilbert
- 379. What is the use of an odometer?**  
a) Distance covered by wheeled vehicle is measured  
b) For reproducing sound  
c) Converting mechanical energy to electric energy  
d) None of the above

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372. B	373. C	374. A	375. C	376. B	377. A
378. A	379. A				

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380. Positive rays in a discharge tube with perforated cathode travel  
 a) Parallel to the anode      b) Parallel to the cathode  
 c) From cathode to anode    d) From anode to cathode
381. In a nuclear reactor, energy is released after an atom of uranium captures  
 a) an electron                      b) a proton  
 c) water                              d) a neutron
382. Who discovered that the flow of electric current influences a magnetic needle?  
 a) Oersted                              b) Edison  
 c) Oppenheimer                      d) Coulomb
383. What is the use of a carburettor?  
 a) Used for measuring quantities of heat  
 b) An apparatus used in air internal combustion  
 c) Used for determining the pressure of gas  
 d) Can be used in bicycle
384. Erect and virtual images are always produced by  
 a) Concave mirrors alone      b) Concave and convex mirrors  
 c) Plane mirrors alone        d) Plane and convex mirrors
385. What is the voltage in electric line for domestic supply?  
 a) 100 volts                              b) 230 volts(AC)  
 c) 230 volts(DC)                      d) None of the above
386. Which one of the following characteristics of ultrasound distinguishes it from ordinary audible sound?  
 a) Phase                                      b) Frequency  
 c) Intensity                                d) Velocity in a medium
387. What is the function of Commutator?  
 a) Instrument employed to change the voltage in an electric current  
 b) Instrument used to change the direction of the flow of current  
 c) Instrument used to demonstrate Archimedes principles  
 d) None of the above
388. At what point of the Kelvin scale does water boil?  
 a)  $373^{\circ}\text{K}$                               b)  $737^{\circ}\text{K}$   
 c)  $210^{\circ}\text{K}$                                 d)  $100^{\circ}\text{K}$

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380. D	381. B	382. A	383. B	384. D	385. B
386. B	387. B	388. A			

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- 389. The glass which darkens in sunlight and shines at darkness is called •**  
 a) Opaque glass                      b) Cooling glasss  
 c) Fibre glass                      d) Photochromic glass
- 390. Who first used the word 'electric'?**  
 a) Volta                      b) Edison  
 c) Marconi                      d) Gilbert
- 391. How many seconds is the frequency of scanning in T.V. set frames?**  
 a) 25                      b) 50  
 c) 525                      d) 60
- 392. In a thermos flask, the vacuum between two walls prevents the heat lost by**  
 a) Conduction                      b) Convection  
 c) Radiation                      d) None of the above
- 393. The temperature of the Sun is measured by**  
 a) Lactometer                      b) Pyrometer  
 c) Hydrometer                      d) Barometer
- 394. To what extent metals are bound to obey Hooke's law?**  
 a) Breaking point                      b) Elastic limit  
 c) Plastic limit                      d) Yield point
- 395. What happens to the volume of water, when it freezes?**  
 a) Decreases                      b) Increases  
 c) Remains the same                      d) None of the above
- 396. Which type of brakes is mostly used in heavy vehicles?**  
 a) Mechanical brake                      b) Air brake  
 c) Hand brake                      d) Hydraulic brake
- 397. Who has given the law of universal gravitation?**  
 a) Mendel                      b) Newton  
 c) Michel Faraday                      d) Joule
- 398. According to wave theory of light, its speed in a denser medium is**  
 a) lesser                      b) greater  
 c) unchanged                      d) none of the above
- 399. Which scientist has coined the word 'Absolute Zero'?**  
 a) Lord Kelvin                      b) Otto Hahn  
 c) Sir John Thompson                      d) Sir Joseph Thompson

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389. D.	390. C	391. A	392. B	393. B	394. B
395. B	396. B	397. B	398. A	399. A	

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400. Which of the following electromagnetic waves has the longest wavelength?  
 a) Ultraviolet rays                      b) Light rays  
 c) Gamma rays                              d) Infra-red rays
401. Name the theory on which photoelectric emission can be explained?  
 a) Wave Theory                              b) Electromagnetic Theory  
 c) Kinetic Theory                              d) Quantum Theory
402. Who was the first person to construct triode?  
 a) Hertz    b) Fleming  
 c) Bardeen                                      d) De Forest
403. Who carried out the artificial transmutation?  
 a) J.J. Thomson                              b) Louis de Broglie  
 c) Rutherford                                  d) Germer
404. Who first constructed diode?  
 a) Hertz    b) Fleming  
 c) Bardeen                                      d) Richard
405. Which one of the following colours has the longest wavelength?  
 a) Yellow                                        b) Blue  
 c) Red    d) Green
406. Which one of the following can be used to focus sunlight?  
 a) Plane mirror                              b) Concave lens  
 c) Concave mirror                              d) Convex mirror
407. What do you mean by nuclear fission?  
 a) Splitting of nucleus                      b) Disintegration of nucleus  
 c) Joining of nucleus                        d) Atom bomb
408. What does a Sphygmomanometer measure?  
 a) Blood Pressure                              b) Atmospheric Pressure  
 c) Lung Pressure                              d) Pressure at the workplace
409. The volume of gas is directly proportional to its  
 a) Pressure                                      b) Fahrenheit temperature  
 c) Kelvin temperature                        d) Celsius temperature
410. Who proposed Carbon-Nitrogen Cycle?  
 a) Chadwick                                    b) Fermi  
 c) Meiter                                        d) Bether

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400. D    401. D    402. D    403. C    404. C    405. C  
 406. C    407. C    408. A    409. C    410. D

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411. On the basis of which the radiators function in automobile work?  
a) Heat conduction  
b) Heat radiation  
c) Heat convection  
d) Heat conduction and heat radiation
412. Which of the following is used to give a three-dimensional view in stereoscopic motion picture?  
a) Polaroid  
b) Grating  
c) Prism  
d) None of these
413. What is the principle used in Metre Bridge?  
a) Ohm's law  
b) Watson's principle  
c) Thomson's effect  
d) Joule's effect
414. Who proposed Corpuscular theory?  
a) Newton  
b) Huygens  
c) Michelson  
d) Foucault
415. Which one of the following is the basis for the theory of expanding universe?  
a) Doppler Effect  
b) Raman Effect  
c) Electromagnetic Effect  
d) None of the above
416. It is economical to transmit electric power at  
a) High Voltage  
b) Low Voltage  
c) Moderate Voltage  
d) None of these
417. On rainy days oil spread on patch of water is coloured due to  
a) Diffraction  
b) Interference  
c) Polarisation  
d) Diffusion
418. When ice melts, its temperature  
a) Increases  
b) Decreases  
c) remains at  $0^{\circ}\text{C}$   
d) first increases and then decreases
419. Cathode rays are streams of  
a) Protons  
b) Positrons  
c) Electrons  
d) Photons
420. Who is the father of hydrogen bomb?  
a) Oppenheimer  
b) Otto Hahn  
c) James B'Connosly  
d) Edward Teller

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411. C.	412. A	413. B	414. A	415. A	416. D
417. B	418. B	419. C	420. D		

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432. What is the term used for calling the amplified sound that is produced when two bodies vibrate symmetrically?
- a) Beat
  - b) Echo
  - c) Resonance
  - d) Sonic Beam
433. When is the most brightly coloured rainbow formed?
- a) When the rain drops are large
  - b) When the rain drops are few
  - c) When the sky is very clear
  - d) None of the above
434. When electron travels in a magnetic field, its
- a) Energy increases
  - b) Energy and velocity increases
  - c) Velocity increases
  - d) Energy and velocity do not change
435. Through which long-distance photography is transmitted?
- a)  $\alpha$  rays
  - b)  $\beta$  rays
  - c)  $\lambda$  rays
  - d) Radio waves
436. Which of the following exerts force on the ground, when a bicycle is moving?
- a) Pedals
  - b) Back wheel
  - c) Front wheel
  - d) Both the wheels
437. What is Calorimeter?
- a) An instrument used for measuring quantities of heat
  - b) An instrument used for tracing the movements of the heart
  - c) An instrument kept on board the ship for measuring accurate time
  - d) None of the above
438. Echoes are produced due to
- a) reflection of sound
  - b) refraction of sound
  - c) diffraction of sound
  - d) polarization of sound
439. What is Tachometer?
- a) An instrument for determining speeds of aeroplanes
  - b) An instrument for cutting the object into thin parts
  - c) An instrument for determining the pressure of gas
  - d) None of the above

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432. C    433. A    434. D    435. D    436. D    437. A  
438. A    439. A

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**440. What is a pipette?**

- a) A glass with the aid of which definite volume of liquid may be transferred
- b) It is a name of a medicine
- c) A branch of the study of physics
- d) None of the above

**441. What is Radar?**

- a) It is an instrument used to detect direction of distant invisible objects
- b) It is an instrument used to transmit images from one place to another
- c) It is an instrument used to measure sugar in the blood
- d) None of the above

**442. Laser differs basically from conventional ordinary sources of light in the sense that it is**

- a) Monochromatic but incoherent
- b) Monochromatic and coherent
- c) Coherent and polychromatic
- d) Capable of working in pulses only

**443. What is Spherometer?**

- a) An instrument for recording earthquake shocks
- b) An instrument for measuring curvature of surfaces
- c) An instrument for observing distant objects
- d) None of the above

**444. What is Ultrasonic?**

- a) Frequency in excess of about 20,000 cycles per second
- b) About 30,000 cycles per second
- c) About 19,000 cycles per second
- d) None of the above

**445. Name the process of transmission of heat in straight lines without heating the intervening medium.**

- a) Oxidation
- b) Refraction
- c) Radiation
- d) None of the above

**446. X-rays are not deflected in electric and magnetic fields because they are**

- a) Charged particles
- b) Electromagnetic waves
- c) Hard rays
- d) Moving with high velocity

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440. A    441. A    442. C    443. B    444. A    445. C  
446. B

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447. A    448. B    449. A    450. A    451. B    452. D  
453. D    454. B    455. B

456. What is one kilowatt hour equal to?  
 a) 3.6 mega joules                      b) 3.8 mega joules  
 c) 3.2 mega joules                      d) 4.0 mega joules.
457. What is the minimum escape velocity required for a rocket to be launched into space?  
 a) 5 km/s                                      b) 6 km/s  
 c) 11 km/s                                    d) 15 km/s
458. A ball is dropped from the top of a high building with a constant acceleration of  $9.8\text{m/s}^2$ . What will be its velocity after 3 seconds?  
 a) 9.8 m/s                                    b) 19.6 m/s  
 c) 29.4 m/s                                  d) 39.2 m/s
459. Which one of the following is not a physical change?  
 a) Magnetisation of iron  
 b) Dropping a piece of sodium amalgam in water  
 c) Addition of NaCl to water  
 d) Boiling of water.
460. Consider the following statements:  
 I. In a periscope, prisms are used to turn the incoming light through  $90^\circ$   
 II. In a periscope, plane mirrors can also be used instead of prisms.  
 III. The loss of intensity of light is more in the case of reflection by a mirror.  
 Of these statements:  
 a) II and III are correct                  b) I and II are correct.  
 c) I, II and III are correct.              d) I and III are correct
461. The dimension of coefficient of viscosity are  
 a)  $\text{MLT}^{-1}$                                     b)  $\text{ML}^{-1}\text{T}$   
 c)  $\text{ML}^{-1}\text{T}^{-1}$                                   d)  $\text{MLT}$
462. Which one of the following statements is not true about the First Law of Thermodynamics?  
 a) Energy of the universe remains constant.  
 b) Energy can neither be created or destroyed.  
 c) Energy may be transformed from one form to another.  
 d) Energy cannot be converted from one form to another.

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456. A    457. C    458. C    459. B    460. B    461. C  
 462. B

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**463.** The two ends of a train moving with constant acceleration pass a certain point with velocities  $u$  and  $v$ . The velocity with which the middle point of the train passes the same point is

- a)  $\frac{u+v}{2}$                       b)  $\frac{u^2+v^2}{2}$   
 c)  $\sqrt{uv}$                       d)  $\sqrt{\frac{u^2+v^2}{4}}$

**464.** The recent tests conducted in Pokhran were only on

- a) nuclear fission devices.    b) nuclear fusion devices.  
 c) Nuclear fission as well as fusion devices.  
 d) 'clean' nuclear devices which leave no radioactive waste.

**465.** Which of the following pairs are correctly matched?

- I. Power of a lens : Dioptres  
 II. Two waves of same frequency and amplitude having constant phase difference : Diffraction  
 III. Total internal reflection : Optical fibres  
 IV. Change of focal length of a lens with colour : Spherical aberration

**Codes:**

- a) II and IV                      b) I, II and III  
 c) II, III and IV                d) I and III

**466.** Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):

**Assertion (A) :** The magnifying power of optical microscopes cannot exceed  $\times 1000$ .

**Reason (R) :** The diameter of the pupil of human eye is about 3.0 mm.

**In the context of the above two statements, which one of the following is correct?**

- a) Both A and R are true, and R is the correct explanation of A.  
 b) Both A and R are true, but R is not a correct explanation of A.  
 c) A is true, but R is false.    d) A is false, but R is true.

---

463. A    464. C    465. D    466. A

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467. If the average kinetic, potential and total energies of a simple pendulum are  $E_k, E_p, E_r$  respectively, then

- a)  $E_k = \frac{1}{2}E_p, E_r = 2E_k$       b)  $E_k = E_p = \frac{1}{2}E_r$   
 c)  $E_p = \frac{1}{2}E_k, E_r = 2E_p$       d)  $E_k = E_p = E_r$

468. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):

**Assertion (A) :** All objects above the surface of water, appear within a cone of apex angle of about  $97^\circ$  instead of  $180^\circ$  when viewed from within water.

**Reason (R) :** Critical angle of water-air interface is about  $48^\circ 36'$ .

In the context of the above two statements, which one of the following is correct?

- a) Both A and R are true, and R is the correct explanation of A  
 b) Both A and R are true, but R is not a correct explanation of A  
 c) A is true, but R is false      d) A is false, but R is true

469. The value of intensity of horizontal component of certain magnetic field is approximately

- a) 3.4 gauss.      b) 0.34 gauss.  
 c) 0.034 gauss      d) 0.0034 gauss.

470. In some nuclear reactors, heavy water is used as a moderator. The heavy water is

- a) Water cooled at  $4^\circ\text{C}$   
 b) Water in which hydrogen is replaced by helium  
 c) Water in which some lead salts are dissolved  
 d) Water with deuterium instead of hydrogen atoms

471. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):

**Assertion (A) :** The upper end of a lightning conductor is pointed

**Reason (R) :** The electric field near the surface of a charged conductor is directly proportional to the radius of curvature of the surface at the point.

In the context of the above two statements, which one of the following is correct?

- a) Both A and R are true, and R is the correct explanation of A  
 b) Both A and R are true, but R is not a correct explanation of A.  
 c) A is true, but R is false.  
 d) A is false, but R is true.

467. B    468. A    469. B    470. D    471. C

**472. Match List-I (different types of thermometers) with List-II (relevant physical properties on which they are based) and select the correct answer using the codes given below the lists:**

<i>List-I</i>		<i>List-II</i>	
A) Mercury Thermometer		1) Radiation	
B) Pyrometer		2) Thermo electric effects	
C) Thermocouple		3) Variation of resistance with temperature	
D) Platinum Resistance Thermometer		4) Variation of volume with temperature	

	A	B	C	D
a)	4	2	1	3
b)	4	1	2	3
c)	3	1	2	4
d)	3	2	1	4

**473. The following theories have been put forth regarding temperature dependence of heat capacity of solids:**

- I. Debye's theory
- II. Einstein's theory
- III. Dulong and Petit's law

**The correct chronological order in which the above theories have been developed is:**

- a) I, II, III
- b) II, III, I
- c) III, II, I
- d) II, I, III

**474. Match the following using the codes given below the lists:**

<i>List-I (Entity)</i>		<i>List-II (Name)</i>	
A) Quantized lattice vibration in solids		1) Photon	
B) Quantum of electromagnetic radiation		2) Exciton	
C) Bound electronhole pair		3) Magnon	
D) Quantized elementary excitation of a spin system		4) Phonon	

	A	B	C	D
a)	4	2	1	3
b)	4	1	2	3
c)	3	1	2	4
d)	3	2	1	4

472. B    473. C    474. B

**475. Consider the following statements:**

The magnetic field produced along the axis of a solenoid depends on

- I. the length of the solenoid.
- II. the current flowing through the solenoid.
- III. the area of cross-section of the solenoid.
- IV. the number of turns per unit length of the solenoid.

Of these statements:

- a) I, II and III are correct. b) II and IV are correct.
- c) II, III and IV are correct d) I and IV are correct.

**476. The unit used to measure the supersonic speed is**

- a) Knots. b) Mach.
- c) Richter. d) Hertz.

**477. Consider the following statements:**

An electric current can flow in a semi-conductor by the flow of

- I. electrons.
- II. neutrons.
- III. kryptons.
- IV. holes.

Of these statements:

- a) I, II, and III are correct. b) II and III are correct.
- c) I and IV are correct. d) I, II, III and IV are correct

**478. The Centigrade and Fahrenheit scales will have the same value at**

- a)  $0^{\circ}$  b)  $-32^{\circ}$
- c)  $-40^{\circ}$  d)  $-273^{\circ}$

**479. When an electrical line tester fitted with light device commonly used by electricians is brought in contact with a live wire, a small glow is observed. This glow is commonly due to the presence of**

- a) Xenon b) Argon.
- c) Krypton d) Neon.

**480. Sensitive electrical devices are often placed inside an earthed copper screen grid. This arrangement shields the device from**

- a) external electric fields only.
- b) external magnetic fields only.
- c) both external magnetic and electric fields.
- d) cosmic radiation.

---

475. B 476. B 477. C 478. C 479. D 480. A

---

481. Irregular complex shapes found in hundreds of objects in nature from clouds to coastlines can possibly be explained by scientists on the basis of laboratory studies of
- Gravitation.
  - Fractals
  - Mechanical waves.
  - Thermodynamic fluctuations
482. Nickel-Cadmium standard cell is referred to as a standard cell because it always gives
- constant current
  - constant voltage in a circuit.
  - constant E.M.F. in open-circuit.
  - any desired E.M.F. of constant value.
483. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):
- Assertion (A) :** A person standing on a platform revolving with a constant angular velocity can decrease his angular velocity by lowering his stretched hands.
- Reason (R) :** If there are no external torques acting on a system, its momentum is conserved.
- In the context of the above two statements, which one of the following is correct?
- Both A and R are true, and R is the correct explanation of A
  - Both A and R are true, but R is not a correct explanation of A
  - A is true, but R is false
  - A is false, but R is true
484. Consider the following statements regarding a motor car-battery:
- The voltage is usually 12V.
  - Electrolyte used is hydrochloric acid.
  - Electrodes are lead and copper.
  - Capacity is expressed in ampere-hour.
- Which of the above statements are correct?
- I and II
  - II and III
  - III and IV
  - I and IV
485. Endoscopy, a technique used to explore the stomach or other inner parts of the body is based on the phenomenon of
- total internal reflection.
  - interference.
  - diffraction.
  - polarisation.

---

481. D    482. C    483. D    484. D    485. A

---

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494. A particle oscillating in simple harmonic motion has amplitude 'a'. The distance from the mean position at which its velocity will be one-half of the maximum velocity is

a)  $\frac{\sqrt{3}}{2}a$

b)  $\sqrt{3}a$

c)  $\frac{2}{\sqrt{3}}a$

d)  $\frac{1}{\sqrt{3}}a$

495. The main difference between longitudinal and transverse waves is that

- a) diffraction can be observed only in longitudinal waves.
- b) interference phenomenon is possible only for transverse waves.
- c) only the transverse waves can be polarised and not the longitudinal waves.
- d) reflection is observed only for transverse waves and not for the longitudinal waves.

496. The power of a convex lens having a focal length 25 cm will be

a) + 0.04

b) - 4 D

c) + 4 D

d) - 0.04 D

497. Match List-I with List-II and select the correct answer using the codes given below the lists:

*List-I*  
(Laws)

*List-II*  
(Physical quantities related to the given law)

- |  |  |
|--|--|
| A) Ampere's law                                | 1) Current and voltage                 |
| B) Faraday's law of electro-magnetic induction | 2) Direction of induced current        |
| C) Lenz's law                                  | 3) Magnetic flux and electric field    |
| D) Ohm's law                                   | 4) Magnetic field and electric current |

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 4 | 3 | 1 | 2 |
| b) | 4 | 3 | 2 | 1 |
| c) | 3 | 4 | 2 | 1 |
| d) | 3 | 4 | 1 | 2 |

494. A    495. C    496. C    497. B





## • CHEMISTRY •

- Galvanising of sheet iron is done by dipping the sheet metal into molten
  - mercury
  - cadmium
  - lead
  - zinc
- Which one of the following is an element?
  - Ruby
  - Sapphire
  - Emerald
  - Diamond
- Three important micronutrients essential for human beings are
  - Copper, Zinc and Iodine
  - Zinc, Copper and Potassium
  - Nitrogen, Molybdenum and Iodine
  - Sulphur, Copper and iron
- Gypsum is added to cement clinker to
  - increase the tensile strength of the cement
  - bind the particles of calcium silicate
  - decrease the rate of setting of cement
  - facilitate the formation of colloidal gel
- Which one of the following chemicals is responsible for the depletion of Ozone layer in the atmosphere?
  - Chlorofluorocarbons
  - Nitrous oxide
  - Sulphur dioxide
  - Carbon dioxide
- Chlorophyll is a naturally occurring chelate compound in which the central metal is
  - Magnesium
  - Copper
  - Calcium
  - Iron
- To avoid 'knocking' of the engine of a car, certain compounds are added to petrol, which are known as anti-knocking agents. Which one of the following is an anti-knocking agent?
  - Ethyl alcohol
  - White petrol
  - Tetra ethyl lead
  - Butane
- Which one of the following colloidal systems is represented by fog?
  - Liquid in gas
  - Gas in liquid
  - Solid gas
  - Liquid in liquid

Ans: 1. D 2. D 3. A 4. C 5. A 6. A  
7. C 8. A

- a) lead                      b) chromium  
c) zinc                     d) tin

- a) it has a high boiling point  
b) it has a high dipole moment  
c) it has a high specific heat  
d) it has no colour

- a) zirconium                      b) thorium  
c) titanium                        d) iron

- a) Atomic Number      b) Atomic radii  
c) Ionic radii      d) Electron affinity

- A) Potassium nitrate  
B) Potassium sulphate  
C) Potassium bromide  
D) Mono Potassium

- 1) Bakery
- 2) Photography
- 3) Fertilizer
- 4) Gun powder

	A	B	C	D
a)	4	3	1	2
b)	3	1	2	4
c)	4	3	2	1
d)	1	2	3	4

- a) zinc                      b) iron  
c) copper                  d) magnesium

- It is

- 1) used in welding industry  
2) used as a raw material in preparing plastics  
3) easily obtained by mixing silicon carbide and water  
a) 1 & 3 are correct      b) 2 & 3 are correct  
c) all statements are correct      d) 1 & 2 are correct

15. D.

**16. Match the Lists I & II correctly:****List I**

- A) Blue Vitriol  
 B) Epsom salt  
 C) Baking soda  
 D) Caustic soda

**List II**

- 1) Sodium bicarbonate  
 2) Sodium hydroxide  
 3) Magnesium sulphate  
 4) Copper sulphate

	A	B	C	D
a)	3	4	2	1
b)	4	3	2	1
c)	3	4	1	2
d)	4	3	1	2

**17. Which of the following elements is essential for the construction of nuclear reactors?**

- a) Cobalt                      b) Nickel  
 c) Zirconium                d) Tungsten

**18. Which of the elements are present in all proteins?**

1. Carbon                      2. Hydrogen  
 3. Oxygen                      4. Nitrogen

Select the correct answer from the codes given below:

**Codes:**

- a) 2 and 3                      b) 1,2 and 4  
 c) 1,3 and 4                      d) 1,2,3 and 4

**19. Which of the following elements is alloyed with iron to produce steel which can resist high temperatures and also have high hardness and abrasion resistance?**

- a) Aluminium                b) Chromium  
 c) Nickel                      d) Tungsten

**20. The first comprehensive classification of elements was made by**

- a) Berzelius                      b) Sorensen  
 c) Mendeleef                      d) Avogadro

**21. The chemical property of an element can be related to its**

- a) state                          b) size  
 c) molecular size                d) electronic configuration

**22. Which is explosive?**

- a)  $\text{PCl}_2$                           b)  $\text{NF}_3$   
 c) TNT                          d) None of the above

16. D    17. C    18. D    19. B    20. C    21. D  
 22. C

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35. Another name for mercurous chloride is \_\_\_\_\_

- a) amalgam                      b) plaster of paris  
c) calomel                      d) blue vitriol

36. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List I**

- A) Nichrome  
B) Spiegeleisen  
C) Invar  
D) German Silver  
E) Bronze

**List II**

- 1) Fe, Ni, C  
2) Cu, Sn  
3) Fe, Cr  
4) Cu, Zn, Ni  
5) Fe, Mn, C

**Codes:**

	A	B	C	D	E
a)	3	5	1	4	2
b)	1	2	3	4	5
c)	5	4	3	2	1
d)	4	1	2	3	5

37. A liquid in solid colloid is called

- a) emulsion                      b) aerosol  
c) gel                              d) sol

38. The scattering of light by the colloidal particles is called

- a) Brownian movement      b) Rayleigh Scattering  
c) Electrophoresis          d) Tyndall effect

39. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List I**

- A) aerosol  
B) liquid aerosol  
C) sol  
D) foam  
E) gel

**List II**

- 1) soap lather  
2) cheese  
3) paint  
4) fog  
5) smoke

**Codes:**

	A	B	C	D	E
A)	5	4	3	1	2
B)	1	2	3	4	5
C)	5	4	3	2	1
D)	4	1	2	3	5

35. B    36. A    37. C    38. D    39. A





51. HDPE (high density polyethylene) is produced by the polymerisation of ethylene in the presence of
  - a) oxygen
  - b) carbon tetrachloride
  - c) ethyl aluminate
  - d) titanium tetrachloride
52. Vulcanising is the process of heating rubber with
  - a) Phosphorus
  - b) Nitrogen
  - c) Sulphur
  - d) Peroxide compound
53. The substance used in the manufacture of high voltage insulators is
  - a) natural rubber
  - b) silicon
  - c) silicon carbide
  - d) artificial rubber
54. Nylon is prepared from
  - a) ethylene glycol and adipic acid
  - b) hexamethylene diamine and phthalic acid
  - c) ethylene glycol and nitric acid
  - d) adipic acid and hexamethylene diamine
55. Which is not a natural fibre?
  - a) cotton
  - b) wool
  - c) rayon
  - d) jute
56. Indigo is
  - a) an acid dye
  - b) a basic dye
  - c) a vat dye
  - d) a direct dye
57. Magnesium belongs to \_\_\_\_\_ group.
  - a) Alkali metals
  - b) inert gases
  - c) halogens
  - d) alkaline earth metals
58. The hardest substance known is
  - a) Diamond
  - b) Steel
  - c) Platinum
  - d) Tungsten
59. Atomic number gives the number of \_\_\_\_\_ in an atom.
  - a) protons
  - b) electrons
  - c) (a) or (b)
  - d) neutrons
60. Phosphorus is mainly extracted from \_\_\_\_\_
  - a) sand
  - b) bone ash
  - c) ash
  - d) fertilizer
61. Identify the fertilizer from the following:
  - a) silica
  - b) phospho bronze
  - c) super phosphate
  - d) calcium silicate

---

51. D	52. C	53. B	54. D	55. C	56. C
57. D	58. A	59. C	60. B	61. C	

---

62. Which one of the following pairs is not correctly matched?
- | Chemicals       | Uses                                     |
|-----------------|--|
| a) Herbicides   | - To kill weeds                          |
| b) Fungicides   | - Used against fungal infections         |
| c) Insecticides | - Used against avians and ants           |
| d) Antibiotics  | - Used against bacterial plant pathogens |
63. When chlorine reacts with hydrogen sulphide \_\_\_\_\_ is precipitated.
- a) chloride                      b) hydrogen  
c) sulphur                      d) silica
64. The chief source of aluminium is \_\_\_\_\_
- a) Cargolite                      b) Bauxite  
c) Feldspar                      d) Haematite
65. The valency of aluminium is
- a) 1                                  b) 2  
c) 3                                  d) 4
66. Maximum 14 electrons are accommodated in subshell
- a) s                                  b) p  
c) d                                  d) f
67. By losing one electron the electronic configuration of sodium is
- a) 2,8                                  b) 2,8,2  
c) increased                      d) not changed
68. Number of atoms in 1 molecule of bromine is
- a) 1                                  b) 2  
c) 3                                  d) 4
69. Calcium carbide reacts with water to give \_\_\_\_\_ gas.
- a) ethylene                      b) methylene  
c) acetylene                      d) propylene
70. Rectified spirit is also known as
- a) methylated spirit              b) power alcohol  
c) absolute alcohol              d) fermented liquor
71. The number of periods in modern periodic table is
- a) 7                                  b) 32  
c) 18                                  d) 8

---

62. A	63. C	64. B	65. C	66. D	67. A
68. B	69. C	70. C	71. A		

---

72. Cathode rays consist of \_\_\_\_\_ charged particles.  
 a) positively                      b) negatively  
 c) chargeless                      d) neutral
73. \_\_\_\_\_ is formed as slag in extraction of phosphorus.  
 a) Phosphorus oxide              b) Calcium oxide  
 c) Phosphorus silicate              d) Calcium silicate
74. A mixture of \_\_\_\_\_ and \_\_\_\_\_ is called power alcohol.  
 a) ethanol; methanol              b) ethanol; petrol  
 c) methanol; petrol              d) petrol; propanol
75. Cotton is bleached by  
 a) chlorine                      b) potassium chloride  
 c) hydrogen chloride              d) carbon dioxide
76. Isotopes of an element have  
 a) same mass number              b) different number of neutrons  
 c) different number of protons  
 d) different electronic configuration
77. The elements of final zero group of the periodic table are called  
 a) metals                      b) non-metals  
 c) halogens                      d) inert or noble gases
78. The peak of atomic volume curve is occupied by  
 a) alkali metals                      b) halogens  
 c) alkaline earth metals              d) inert gases
79. Chlorine oxidises hydrogen sulphide to  
 a) sulphate                      b) sulphite  
 c) sulphur                      d) sulphuric acid
80. Phospho proteins are present in  
 a) the brain of animals              b) the nervous tissues of animals  
 c) plants                      d) all the above
81. Consider the following statements:  
 I. Amalgams are alloys containing Hg  
 II. Amalgams are always in liquid state  
 III. Amalgams are highly coloured alloys  
 IV. Amalgams are alloys which resist corrosion  
 Of the statements:  
 a) I alone is correct              b) I and II are correct  
 c) I, II and III are correct              d) All are correct

---

72. B	73. D	74. B	75. A	76. B	77. D
78. A	79. C	80. D	81. A		

---

82. Isotopes of an element have  
 a) the same atomic mass  
 b) the same atomic number  
 c) the same proportion in different elements  
 d) difference in mass
83. Atomic radius, as we go from left to right in the periodic table  
 a) is a constant  
 b) increases gradually  
 c) decreases  
 d) increases first and then decreases
84. Which of the following is true?  
 a) A mineral cannot be an ore  
 b) All minerals are ore  
 c) All ores cannot be minerals  
 d) All ores are minerals
85. The colourless gas with the smell of rotten fish is  
 a)  $H_2S$   
 b)  $PH_3$   
 c)  $C_2H_4$   
 d)  $C_2H_2$
86. The fungicide Bordeaux mixture consists of  
 a) Borax and copper sulphate  
 b) Borax and calcium hydroxide  
 c) Boric acid and calcium hydroxide  
 d) Copper sulphate and calcium hydroxide
87. Tobacco is preserved from drying out in  
 a) Glycerol  
 b) Glycol  
 c) Ethanol  
 d) Acetone
88. Which metal is commonly used for making an electromagnet?  
 a) Copper  
 b) Iron  
 c) Nickel  
 d) Cobalt
89. Nylon 66 is prepared from  
 a) Phenol and Formaldehyde  
 b) Ethylene glycol and Phthalic acid  
 c) Hexamethylene diamine and Adipic acid  
 d) Ethylene glycol and Adipic acid
90. The formula of tetrachlorodiamine platinum (iv) is  
 a)  $[Pt (NH_3)_2 Cl_2] Cl_2$   
 b)  $K_4 [Pt (NH_3)_2 Cl_4]$   
 c)  $[Pt (NH_3)_2 Cl_4]$   
 d) None of the above

---

82. B	83. C	84. D	85. A	86. D	87. A
88. B	89. C	90. C			

---

- 91.** The co-ordination number of atoms in BCC lattice is  
a) 12                                  b) 6  
c) 8                                      d) 4
- 92.** Which one of the following has the highest boiling point?  
a) 0.1 M Urea                        b) 0.1 M NaCl  
c) 0.1 M Sucrose                     d) 0.1 M Glucose
- 93.** Which has the highest pH?  
a) 1 M HCl                              b) 1 M NaOH  
c) 1 M NH<sub>4</sub>OH                        d) 1 M Na<sub>2</sub>CO<sub>3</sub>
- 94.** Match List-I with List-II and select the correct answer using the codes given below the lists:

### List I

- A) Glass  
B) Cement  
C) Matches  
D) Ink

### List II

- 1) Phosphorus
- 2) Clay
- 3) Silica
- 4) Carbon black

**Codes:**

	A	B	C	D
a)	3	1	4	2
b)	1	2	3	4
c)	3	2	1	4
d)	4	2	1	3

95. What is the composition of baking powder?
- a)  $\text{Na}_2\text{CO}_3$  + Acetic acid      b)  $\text{NaHCO}_3$  + Citric acid  
c)  $\text{NaHCO}_3$  +  $\text{Na}_2\text{CO}_3$       d)  $\text{NaHCO}_3$  + Tartaric acid
96. "Pasteurization" means
- a) boiling and cooling of milk  
b) heating of milk  
c) boiling and cooling to prevent microbial spoilage  
d) none of these
97. Which one of the following is correctly matched?
- a) Rock salt mainly consists of - Sodium  
b) 'Plaster of Paris' is - Ptyalin  
chemically known as  
c) Haemoglobin consists of a - Gypsum  
metal  
d) Starch is digested by - Iron

91. C    92. C    93. B    94. C    95. C    96. C  
97. A



98. A    99. B    100. D    101. C    102. B    103. D  
104. D    105. B    106. A

107. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List-I**

- A) Antipyretics
- B) Polyester
- C) Insecticide
- D) Explosive

**List-II**

- 1) Terylene
- 2) Gammexene
- 3) N-Cl compounds
- 4) Lowers the temperature of the body

**Codes:-**

	A	B	C	D
a) 1	3	4	2	
b) 2	4	3	1	
c) 3	1	2	4	
d) 4	1	2	3	

108. Biogas mainly contains

- a) carbon dioxide
- b) oxygen
- c) methane
- d) nitrogen

109. Acetyl salicylic acid is commonly used as

- a) tear gas
- b) a fertilizer
- c) a pain killer
- d) a sedative

110. Which solution will have the highest boiling point?

- a) 1 % solution of glucose in water
- b) 1 % solution of sodium chloride in water
- c) 1 % solution of zinc sulphate in water
- d) 1 % solution of urea in water

111. The disaccharide present in milk is

- a) Sucrose
- b) Maltose
- c) Lactose
- d) Cellotriose

112. Natural petroleum is a liquid mixture of paraffin hydrocarbons

- a)  $C_1$  to  $C_{12}$
- b)  $C_1$  to  $C_{20}$
- c)  $C_1$  to  $C_{10}$
- d)  $C_5$  to  $C_{15}$

113. The chemical added to the colourless LPG cooking gas to give odour is

- a) Chlorine
- b) Bromine
- c) Nitrogen
- d) Sulphur

114. The gas that is responsible for global warming is

- a) carbon dioxide
- b) oxygen
- c) methane
- d) sulphur dioxide

---

107. D	108. C	109. C	110. B	111. C	112. C
113. D	114. A				

---

115. Which one of the following is incorrectly matched?
- |                                 |   |
|---------------------------------|---|
| a) Mohr's salt                  | - $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ |
| b) Simple salt                  | - $\text{NaCl}$   |
| c) Basic salt                   | - $\text{Cu}(\text{OH})\text{NO}_3$                                   |
| d) Co-ordination salt (complex) | - $\text{K}_4\text{Fe}(\text{CN})_6$                                  |
116. Natural rubber is a polymer derived from
- |              |              |
|--------------|--------------|
| a) Butadiene | b) Ethylene  |
| c) Isoprene  | d) Propylene |
117. Butane dioic acid is
- |                  |                  |
|------------------|------------------|
| a) malonic acid  | b) adipic acid   |
| c) succinic acid | d) glutaric acid |
118. Carborundum is
- |                   |                    |
|-------------------|--------------------|
| a) Si             | b) $\text{SiC}$    |
| c) $\text{SiO}_2$ | d) $\text{SiCl}_4$ |
119.  ${}_{20}\text{Ca}^{40}$  and  ${}_{19}\text{K}^{40}$  are
- |            |             |
|------------|-------------|
| a) Isomers | b) Isotopes |
| c) Isobars | d) Isotones |
120. Epsom salt is
- |  |  |
|--|--|
| a) $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ | b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ |
| c) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ | d) None of these                             |
121. The acid used in a car battery is
- |                      |                  |
|----------------------|------------------|
| a) Hydrochloric acid | b) Nitric acid   |
| c) Sulphuric acid    | d) Carbonic acid |
122. The number of ions produced from one molecule of  $\text{K}_4\text{Fe}(\text{CN})_6$  in aqueous solution is
- |      |      |
|------|------|
| a) 4 | b) 3 |
| c) 5 | d) 1 |
123. Trimethyl benzene is called
- |                  |               |
|------------------|---------------|
| a) Pyrogallol    | b) Catechol   |
| c) Mesityl oxide | d) Mesitylene |
124. The formula of Plaster of Paris is
- |  |  |
|--|--|
| a) $\text{CaSO}_4$                                     | b) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$  |
| c) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ | d) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ |
125. A white powder insoluble in water dissolves in ammonium hydroxide. It could be
- |                      |                    |
|----------------------|--------------------|
| a) Silver chloride   | b) Aluminium oxide |
| c) Calcium carbonate | d) Barium sulphate |

115. C	116. C	117. C	118. B	119. C	120. B
121. C	122. C	123. D	124. C	125. A	

126. Match List I with List II and select the correct answer using the codes given below the lists:

List I (Molecule)	List II (Shape)
A) Ammonia	1) Linear
B) Water	2) Planar
C) Boron trifluoride	3) V-shaped
D) Carbon dioxide	4) Pyramid

Codes:

	A	B	C	D
a)	3	2	1	4
b)	3	1	4	2
c)	4	3	2	1
d)	1	2	3	4

127. Match List-I with List-II and select the correct answer using the codes given below the lists

List-I	List-II
A) Cinnabar	1) PbS
B) Zinc blende	2) HgS
C) Galena	3) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$
D) Bauxite	4) ZnS

Codes:

	A	B	C	D
a)	2	1	4	3
b)	2	4	1	3
c)	1	3	2	4
d)	3	1	4	2

128. Sodium thiosulphate (Hypo) is widely used in photography. Its main role in photographic process is due to

- |                      |                        |
|----------------------|------------------------|
| a) Reduction         | b) Oxidation           |
| c) Complex formation | d) Photo decomposition |

129. If the percentage of oxygen in a metallic oxide is 33.33%, then its equivalent mass is

- |       |       |
|-------|-------|
| a) 66 | b) 16 |
| c) 32 | d) 50 |

130. In nature, borax occurs as

- |              |               |
|--------------|---------------|
| a) Tincal    | b) Colemanite |
| c) Tridymite | d) Borasite   |

126. C    127. D    128. B    129. A    130. C

**131. Match List-I with List-II and select the correct answer using the codes given below the lists:**

List-I		List-II	
A) Tollen's reagent		1) Cupric acetate in acetic acid	
B) Barfoed's reagent		2) Mixture of $\text{CuSO}_4$ , Sodium nitrate and $\text{Na}_2\text{CO}_3$	
C) Molisch reagent		3) Ammoniacal silver nitrate solution	
D) Benedict's solution		4) Alcoholic 2-naphthol & Conc. $\text{H}_2\text{SO}_4$	

	A	B	C	D
a)	3	1	4	2
b)	2	1	4	3
c)	2	3	1	4
d)	4	3	1	2

**132. Match List-I with List-II and select the correct answer using the codes given below the lists:**

List-I		List-II	
A) Neutral Ferric		1) Identification of sulphur in organic compounds	
B) Fehling's solution		2) To identify phenolic group	
C) Sodium intropusside solution		3) To identify phosphate	
D) Ammonium molybdate reagent		4) To identify reducing sugars	

	A	B	C	D
a)	3	1	4	2
b)	2	4	1	3
c)	2	3	4	1
d)	3	2	4	1

**133. Petroleum mainly contains**

- |                           |                          |
|---------------------------|--------------------------|
| a) Aliphatic hydrocarbons | b) Aromatic hydrocarbons |
| c) Aliphatic alcohols     | d) None                  |

**134. Bhopal gas tragedy of 1984 was caused by one of the following compounds.**

- |                      |                      |
|----------------------|----------------------|
| a) CO                | b) $\text{COCl}_2$   |
| c) Methyl isocyanide | d) Methyl isocyanate |

131. D    132. A    133. A    134. D

135. A    136. B    137. D    138. D    139. D    140. A  
141. D    142. B    143. A    144. A    145. D



146. Most of the physical and chemical properties of the elements are related to  
 a) Atomic mass                      b) Molecular mass  
 c) equivalent mass                d) electronic configuration
147. The adsorbent used in colour chromatographic method is  
 a) Silica gel                          b) Benzene  
 c) Acetone                          d) Ether
148. The number of orbitals in f sub-shell energy level is  
 a) 3                                      b) 2  
 c) 5                                      d) 6
149. In the periodic table, the elements present in the groups from 3 to 12 are known as  
 a) s-block                              b) p-block  
 c) d-block                              d) f-block
150. The lowest level energy band in a solid is called  
 a) Valence band                      b) Conduction band  
 c) Fermi level                        d) Equal level
151. On the right-hand side of the periodic table are the  
 a) metals                                b) non-metals  
 c) metalloids                          d) rare earths
152. A solution of sodium acetate in water will  
 a) turn red litmus to blue          b) turn blue litmus to red  
 c) decolourise litmus                d) none of these
153. Which of the following elements is the most electro-negative?  
 a) Oxygen                              b) Chlorine  
 c) Nitrogen                            d) Fluorine
154. Match *List-I* with *List-II* and select the correct answer:

List - I				List - II			
A) Benzene hexachloride				1) thermoplastic material			
B) Amatol				2) insecticide			
C) Tetraethyl lead				3) explosive			
D) Polyvinyl chloride				4) anti-knock compound			
A	B	C	D				
a) 2	3	4	1				
b) 4	1	2	3				
c) 1	2	3	4				
d) 3	4	1	2				

146. D    147. A    148. D    149. C    150. A    151. B  
 152. B    153. D    154. A

155. Silver nitrate produces a black stain on skin due to  
 a) being strong reducing agent  
 b) its corrosive action  
 c) its reduction to metallic silver  
 d) none of these
156. Copper sulphate solution is acidic in nature due to  
 a) hydrolysis  
 b) ionisation  
 c) presence of sulphate ions  
 d) none of these
157. A metal, when left exposed to the atmosphere for some time, becomes coated with green basic carbonate. The metal is  
 a) Copper  
 b) Nickel  
 c) Silver  
 d) Zinc
158. Which of the following is not a chemical action?  
 a) burning of coal  
 b) conversion of water into steam  
 c) digestion of food  
 d) burning of paper
159. Which of the following is a physical change?  
 a) burning of cooking gas  
 b) souring of milk  
 c) digestion of food  
 d) dissolution of sugar into water
160. Conversion of a substance directly from solid to vapour state is known as  
 a) vaporisation  
 b) sublimation  
 c) decomposition  
 d) ionisation
161. The chemical name of vitamin C is  
 a) citric acid  
 b) ascorbic acid  
 c) oxalic acid  
 d) nitric acid
162. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List - I**

- A) Nitroglycerine  
 B) Calcium carbonate  
 C) Potash  
 D) Calcium hypochlorite

**List - II**

- 1) Bleaching powder  
 2) Explosive  
 3) Chalk  
 4) Alum

**Codes:**

	A	B	C	D
a)	1	2	4	3
b)	2	3	4	1
c)	4	2	3	1
d)	3	1	4	2

155. B    156. A    157. D    158. B    159. D    160. B  
 161. B    162. B

163. The chemical name of bauxite is  
 a) aluminium oxide                      b) aluminium chloride  
 c) aluminium sulphite                  d) hydrated aluminium oxide
164. Permanent hardness of water is due to the presence of  
 a) calcium bicarbonate                  b) magnesium bicarbonate  
 c) calcium sulphate                      d) sodium bicarbonate
165. Temporary hardness of water is due to the presence of  
 a) calcium sulphate                      b) calcium bicarbonate  
 c) magnesium sulphate                  d) calcium chloride
166. The chemical composition of four well-known items which are used in large quantities are given below. Which one is incorrect?  
 a) Washing soda : sodium, hydrogen and aluminium  
 b) Caustic soda : sodium, hydrogen and oxygen  
 c) Baking soda : sodium, hydrogen, oxygen and carbon  
 d) Common salt : sodium, and chlorine

167. Which of the following metals is in liquid state at normal room temperature?

- a) sodium                                      b) radon  
 c) gallium                                      d) silicon

168. Match List-I with List-II and select the correct answer using the codes given below the lists:

## List - I

- A) Carbon dioxide  
 B) Chlorine  
 C) Hydrogen  
 D) Nitrous oxide

## List - II

- 1) Reducing agent  
 2) Anaesthetic in dentistry  
 3) Bleaching Powder  
 4) Refrigerant

Codes:

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 4 | 3 | 2 | 1 |
| c) | 4 | 3 | 1 | 2 |
| d) | 2 | 1 | 3 | 4 |

169. Which of the following elements behave chemically both as metal and non-metal?

- a) argon                                      b) carbon  
 c) xenon                                      d) boron

163. D    164. C    165. B    166. A    167. C    168. C  
 169. D

170. The major constituent of air is

- a) nitrogen                      b) carbon dioxide  
c) oxygen                        d) hydrogen

171. Which among the following is in liquid state at normal room temperature?

- a) mercury                      b) sodium  
c) phosphorus                d) none of these

172. Which of the following is a chemical change?

- a) evaporation of water      b) burning of candle  
c) glowing of an electric bulb  
d) liquefaction of air

173. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I		List-II	
A) Mercury		1) Element	
B) Oxygen		2) Compound	
C) Water		3) Mixture	
D) Air		4) Metal	

Codes:

	A	B	C	D
a)	1	2	3	4
b)	4	3	2	1
c)	4	1	2	3
d)	4	2	3	1

174. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I		List-II	
A) Sodium hydroxide		1) NaCl	
B) Sodium bicarbonate		2) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$	
C) Sodium chloride		3) $\text{NaHCO}_3$	
D) Sodium carbonate		4) NaOH	

Codes:

	A	B	C	D
a)	1	2	3	4
b)	4	2	3	1
c)	4	3	1	2
d)	4	2	3	1

170. A    171. A    172. B    173. C    174. C

175. Which among the following gases is used to manufacture chloroform?

- a) propane                      b) ether  
c) radon                         d) methane

176. What is the chemical name of Green vitriol?

- a) calcium carbonate        b) Iron sulphate  
c) calcium phosphate       d) calcium cyanamide

177. Which of the following is a mixture?

- a) gun powder                b) iron sulphate  
c) brass                        d) dry ice

178. Which of the following is the hardest element?

- a) copper                        b) diamond  
c) iron                          d) silicon

179. Which of the following is the source of common salt?

- a) bauxite                      b) halite  
c) pyrite                        d) calcite

180. Match List-I with List-II and select the correct answer using the codes given below the lists:

**List-I**

- A) Calomel  
B) Candy fluid  
C) Gypsum  
D) Common salt

**List-II**

- 1) Potassium permanganate  
2) Calcium sulphate  
3) Mercurous chloride  
4) Sodium chloride

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 4 | 3 | 2 | 1 |
| c) | 3 | 2 | 1 | 4 |
| d) | 3 | 1 | 2 | 4 |

181. Which of the following gases in air unites with many metals?

- a) hydrogen                    b) oxygen  
c) helium                       d) carbon dioxide

182. Which of the following metals is not affected by air and water under ordinary conditions?

- a) iron                          b) platinum  
c) sodium                      d) none of these

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175. D    176. B    177. A    178. B    179. B    180. D  
181. B    182. B

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183. Diamond is the \_\_\_\_\_ form of carbon.  
 a) crystalline                      b) amorphous  
 c) chemical                      d) alkaline
184. In a chemically pure state, diamonds are  
 a) monochromatic                      b) polychromatic  
 c) colourless                      d) none of these
185. Which metal has the unique tendency to readily combine with itself to form large molecules of atoms linked in long chains (rings)?  
 a) sodium                      b) nitrogen  
 c) carbon                      d) hydrogen
186. Gun powder is a mixture of  
 a) sulphur, carbon and phosphorus  
 b) sulphur, charcoal and nitre  
 c) sulphur, charcoal and carbon  
 d) carbon, nitrogen and chlorine
187. Which of the following is fire-resistant?  
 a) asbestos                      b) gypsum  
 c) dolomite                      d) none of these
188. Match List-I with List-II and select the correct answer using the codes given below the lists:
- | List-I         |  | List-II     |  |
|----------------|--|-------------|--|
| A) Citric acid |  | 1) Milk     |  |
| B) Tannic acid |  | 2) Proteins |  |
| C) Amino acid  |  | 3) Tea      |  |
| D) Lactic acid |  | 4) Lemon    |  |
- Codes:
- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 4 | 2 | 1 | 3 |
| c) | 4 | 3 | 2 | 1 |
| d) | 1 | 3 | 4 | 2 |
189. Which of the following metals is mostly used for qualitative analysis of organic compounds?  
 a) Cu                      b) Hg  
 c) Na                      d) Ca

183. A    184. C    185. C    186. B    187. A    188. C  
 189. C



190. Permanent hardness of water due to sulphates of metals can be destroyed by the use of

- a) zeolites                      b) sulphonides  
c) lime                          d) nitrates

191. The chemical name of laughing gas is

- a) nitrous oxide              b) nitric oxide  
c) nitrogen dioxide          d) nitrogen peroxide

192. Chemically, an enzyme is a

- a) lipid                          b) vitamin  
c) protein                      d) carbohydrate

193. The raw material from which rayon is manufactured is

- a) cellulose                    b) plastic  
c) petroleum                  d) none of these

194. Match List-I with List-II and select the correct answer:

List-I

List-II

- |             |                      |
|-------------|----------------------|
| A) Cyanogen | 1) uric acid         |
| B) Urine    | 2) balloons          |
| C) Helium   | 3) cigarette lighter |
| D) Butane   | 4) welding           |

Codes:

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 2 | 3 | 1 | 4 |
| c) | 3 | 1 | 2 | 4 |
| d) | 4 | 1 | 2 | 3 |

195. An element common to all acids is

- a) hydrogen                      b) oxygen  
c) sulphur                        d) chlorine

196. One gram of a gas occupies 0.16 litres at STP. The molecular weight of the gas is

- a) 64                                b) 140  
c) 160                              d) 224

197. An element found in all organic compounds is

- a) nitrogen                      b) carbon  
c) calcium                      d) none of these

198. All are examples of chemical change, except

- a) magnetising of iron nail    b) rusting of iron rod  
c) digestion of food            d) souring of milk

- 
- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 190. A | 191. A | 192. C | 193. A | 194. D | 195. A |
| 196. B | 197. B | 198. A |        |        |        |
-

**199. In which of the following groups, are the elements written in descending order of their respective atomic weights?**

- a) nitrogen, carbon, oxygen, hydrogen
- b) oxygen, argon, nitrogen, hydrogen
- c) oxygen, nitrogen, helium, hydrogen
- d) oxygen, nitrogen, helium, bromine

**200. Alcohol contains**

- a) nitrogen, hydrogen, oxygen
- b) carbon, hydrogen, oxygen
- c) oxygen, carbon, nitrogen
- d) hydrogen, chlorine, oxygen

**201. Stainless steel is an alloy of**

- |                   |                    |           |
|-------------------|--------------------|-----------|
| I. Chromium       | II. Carbon         | III. Iron |
| a) I and II only  | b) I, II and III   |           |
| c) I and III only | d) II and III only |           |

**202. Match List-I with List-II and select the correct answer:**

- | List - I (Electronic configuration) | List - II (Species) |
|-------------------------------------|---------------------|
| A) $1s^2$                           | 1) Chlorine         |
| B) $1s^2 2s^2 2p^6$                 | 2) Fluoride ion     |
| C) $1s^2 2s^2 2p^6 3s^2$            | 3) Hydride ion      |
| D) $1s^2 2s^2 2p^6 3s^2 3p^3$       | 4) Magnesium        |

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 2 | 4 | 1 |
| b) | 4 | 2 | 1 | 3 |
| c) | 3 | 4 | 2 | 1 |
| d) | 2 | 3 | 4 | 1 |

**203. The chemical name of quartz is**

- a) calcium oxide
- b) calicum phosphate
- c) sodium phosphate
- d) sodium silicate

**204. Quick lime can be obtained by**

- a) adding hydrochloric acid to calcium
- b) heating limestone in a lime kiln
- c) putting calcium in hot water
- d) none of these

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199. C    200. B    201. B    202. A    203. D    204. B

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- 205.** When zinc reacts with hydrochloric acid, the gas evolved is  
a) oxygen                      b) hydrogen  
c) chlorine                    d) none of these
- 206.** The so-called fourth state of matter refers to  
a) mercury                    b) LPG  
c) dry ice                      d) plasma
- 207.** Brown-ring test is used for  
a) analysis of nitrates  
b) identification of certain elements in a solution  
c) measurement of nitrogen in an organic compound  
d) none of these
- 208.** Which of the following acids is found in digestive juices?  
a) lactic acid                  b) tannic acid  
c) amino acid                 d) hydrochloric acid
- 209.** Faraday's law is associated with  
a) electrolysis                b) reaction of gases  
c) pressure on gases         d) temperature and pressure
- 210.** Which of the following laws does not relate to gases?  
a) Boyle's law                b) Charles's law  
c) Gay-Lussac's law         d) Faraday's law
- 211.** What is the chemical symbol of Tungsten?  
a)  $F_3O_4$                       b)  $CO_2$   
c)  $H_2O$                          d) W
- 212.** Which metal was first used by man?  
a) Aluminium                b) Gold  
c) Iron                         d) Brass
- 213.** Silver paper is made of  
a) Silver                        b) Tin  
c) Platinum                   d) None of the above
- 214.** The tendency of an atom in a molecule to attract electrons of a covalent bond towards itself is called  
a) Ionization potential       b) Electron affinity  
c) Electro negativity         d) Ionic bonding
- 215.** What is natural water?  
a) Temporary hard water    b) Permanent hard water  
c) Rain water                 d) None of the above

205. B    206. D    207. A    208. D    209. A    210. D  
211. D    212. A    213. B    214. C    215. C

- 216. What happens to the density of the metal when it is heated?**  
 a) Increases                      b) Remaining the same  
 c) Decreases                      d) None of the above
- 217. Stainless steel usually contains about 15% or more of .**  
 a) Carbon                      b) Nickel  
 c) Manganese                      d) Chromium
- 218. What is primary gold?**  
 a) Platinum                      b) Iron  
 c) Gold of highest purity                      d) None of the above
- 219. Who introduced Analytical Chemistry?**  
 a) Lavoisieur                      b) Fleming  
 c) Descartes                      d) None of the above
- 220. Which has the highest boiling point?**  
 a)  $\text{PH}_3$                       b)  $\text{AsH}_3$   
 c)  $\text{NH}_3$                       d)  $\text{S}_6\text{H}_3$
- 221. Name the chemical having worst smell in the world.**  
 a) Ethyl alcohol                      b) Sulphur dioxide  
 c) Ethylmercaptan                      d) None of the above
- 222. What is heaviest element?**  
 a) Platinum                      b) Uranium  
 c) Diamond                      d) None of the above
- 223. Which physical quality does not change with quantity?**  
 a) Volume                      b) Mass  
 c) Weight                      d) Density
- 224. Which metal is used for cables?**  
 a) Aluminium                      b) Copper  
 c) Tungsten                      d) None of the above
- 225. Which one of the following has the lowest percentage of carbon?**  
 a) Mild steel                      b) Soft steel  
 c) Hard steel                      d) Wrought iron
- 226. Which is called Brown Coal?**  
 a) Lignite                      b) Iron  
 c) Copper                      d) None of the above
- 227. What are isomers?**  
 a) Same specific density                      b) Same viscosity  
 c) Same atomic numbers                      d) None of the above

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216. B	217. D	218. A	219. C	220. C	221. C
222. B	223. D	224. A	225. D	226. A	227. C

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- 228.** What is the correct formula of phosphorus trioxide?

  - a)  $P_2O_3$
  - b)  $P_4O_6$
  - c)  $PO_3$
  - d)  $PO_6$
- 229.** What is the first element of periodic table?

  - a) Sodium
  - b) Neon
  - c) Hydrogen
  - d) Helium
- 230.** Washing soda in water behaves

  - a) Alkaline
  - b) Acidic
  - c) Neutral
  - d) None of these
- 231.** How is paper manufactured?

  - a) made from wood, sodium and bleaching powder
  - b) made from wood and bleaching powder
  - c) made from wood and resin
  - d) made from wood, hydrogen sulphate and resin
- 232.** What is the chemical name for phenol?

  - a) Formaldehyde
  - b) Methyl alcohol
  - c) Acetylene
  - d) None of the above
- 233.** Chemically, what are atoms?

  - a) neutral
  - b) positively charged
  - c) negatively charged
  - d) both positively and negatively charged
- 234.** Which one of the following metals is radioactive?

  - a) Gold
  - b) Aluminium
  - c) Copper
  - d) Uranium
- 235.** What is the state of pure  $P_2O_5$ ?

  - a) White crystal
  - b) White powder
  - c) Blue crystal
  - d) Green powder
- 236.** The volume of 1 N sodium hydroxide required to neutralise 10 ml of 0.5 N hydrochloric acid will be

  - a) 5 ml.
  - b) 10 ml.
  - c) 15 ml.
  - d) 20 ml.
- 237.** What is the chemical name for white metal?

  - a) Copper sulphide
  - b) Aluminium sulphate
  - c) Magnesium sulphate
  - d) None of the above
- 238.** Which one of the following liquids is able to dissolve the gold?

  - a) Nitrous acid
  - b) Hydrochloric acid concentrated
  - c) Aqua regia
  - d) None of the above

228. B    229. C    230. B    231. A    232. A    233. A  
234. D    235. B    236. A    237. A    238. C

- 239. What is Alum?**  
 a) Mixed salt                      b) Acidic salt  
 c) Double Salt                    d) Amphoteric salt
- 240. Which matter is used in storage batteries?**  
 a) lead                                b) copper  
 c) zinc                                d) aluminium
- 241. What does ink contain?**  
 a) Silver chloride                  b) Silver nitrate  
 c) Silver chloride and Hydrochloride  
 d) Carbon Tetrachloride
- 242. Why is gold said to be a noble metal?**  
 a) It gives lot of money on being sold  
 b) It is malleable and ductile  
 c) It is unreactive  
 d) None of the above
- 243. What is the other name for ordinary glass?**  
 a) Lime glass                      b) Sodalime glass  
 c) Soda glass                      d) None of the above
- 244. Which is the lightest gas next to hydrogen?**  
 a) Helium                            b) Oxygen  
 c) Laughing Gas                  d) None of the above
- 245. Which is the most abundant metal in the earth's crust?**  
 a) Iron                                b) Gold  
 c) Radium                          d) None of the above
- 246. Brass is an alloy of copper and**  
 a) Zinc                                b) Mercury  
 c) Iron                                d) Lead
- 247. Plaster of Paris is made from**  
 a) Bauxite                          b) Gypsum  
 c) Epsomite                        d) Lime
- 248. Ammonia is**  
 a) basic                                b) acidic  
 c) neutral                            d) amphiprotic
- 249. What is the important ore of uranium?**  
 a) Toconite                        b) Chalcocite  
 c) Pitch-blende                  d) Carnallite

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239. C	240. A	241. B	242. C	243. B	244. A
245. A	246. A	247. B	248. A	249. C	

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- 250.** Which gas is not present in atmosphere?  
a) Neon                                  b) Oxygen  
c) Helium                                d) Krypton
- 251.** Stainless steel is an alloy of steel and  
a) Copper                                 b) Chromium  
c) Platinum                              d) Silver
- 252.** Parkes Process is used to recover  
a) Silver                                  b) Copper  
c) Platinum                              d) Lead
- 253.** Who wrote 'History of Hindu Chemistry'?  
a) Sri P.C. Ray                          b) Oppenheimer  
c) Radhakumud Mukherjee        d) None of the above
- 254.**  $P_2O_5$  is a  
a) Strong oxidising agent            b) Strong reducing agent  
c) dehydrating agent                d) basic oxide
- 255.** Which one of the following amino acids has the lowest molecular weight?  
a) Lusine                                 b) Alanine  
c) Aspartic acid                        d) Valine
- 256.**  $N_2O_5$  is  
a) acid oxide                             b) basic oxide  
c) neutral oxide                        d) ascarpic oxide
- 257.** Which is not the property of the transition elements?  
a) Hard                                    b) Malleable  
c) Very soft                               d) Ductile
- 258.** Who produced Nylon?  
a) W.H. Carothers                      b) Moison  
c) Thanas Hanlock                    d) Sir. Joseph Swan
- 259.** Which one of the following non-metals conducts electricity?  
a) Graphite                               b) Ozone  
c) Silicon                                 d) None of the above
- 260.** Who was the father of chemistry?  
a) Robert Boyle                        b) Cavendish  
c) Lister                                  d) Urey
- 261.** What is the chemical name for marble?  
a) Calcium carbonate                b) Titanium dioxide  
c) Potassium nitrate                 d) None of the above

250. D    251. B    252. A    253. A    254. C    255. B  
256. A    257. C    258. A    259. A    260. B    261. B

262. Which substance is known as super liquid?  
 a) Aqua regia                      b) Liquid Helium  
 c) Mercury                          d) None of the above
263. Hess's law is associated with  
 a) heat exchange in chemical reaction  
 b) decomposition during electrolysis  
 c) effect of pressure on gases  
 d) none of the above
264. Which one of the following metals was first discovered?  
 a) Copper                              b) Gold  
 c) Uranium                            d) None of the above
265. Who is the father of modern chemistry?  
 a) Lavoisier                           b) Avogadro  
 c) Charles                            d) Boyle
266. The atomic number of chromium is  
 a) 23                                      b) 24  
 c) 22                                      d) 25
267. Which is known as the king of chemicals?  
 a) Gold                                  b) Platinum  
 c) Sulphuric acid                    d) Laughing Gas
268. Which scientist has formulated the formula of rubber?  
 a) Michael Faraday                  b) Davy  
 c) Diesel                                d) None of the above
269. Which country first made chemical fertilizers by using nitrogen produced from air?  
 a) U.S.A.                                b) Germany  
 c) Canada                               d) China
270. Which is the chemical used in active artificial fibre?  
 a) Rayon                                b) Terelene  
 c) Teflon                                d) None of the above
271. Which one of the following gases fumes in air?  
 a) Sulphur dioxide                   b) White Phosphorus  
 c) Hydrogen chloride                d) None of the above
272. Which substance has the highest heat capacity?  
 a) Water                                b) Mercury  
 c) Phosphorus                        d) Gold

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262. B	263. A	264. B	265. A	266. B	267. C
268. A	269. B	270. A	271. C	272. B	

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- 273. Which acid does not contain oxygen?**  
 a) Sulphuric Acid                      b) Carbon Monoxide  
 c) Laughing gas                        d) Hydrochloric acid
- 274. What is the composition of Type metal?**  
 a) Lead, Antimony & Tin    b) Copper, Tin & Zinc  
 c) Nickel, Chromium & Zinc   d) None of the above
- 275. Which one of the following is in Rock Salt?**  
 a) Aluminium                          b) Sodium  
 c) Iron                                    d) Mercury
- 276. The important and most common ore of chromium is**  
 a) Chrome ochre                        b) Carnalite  
 c) Chrocosite                            d) Chromite
- 277. How is plastic chemically known?**  
 a) Sodium Aluminate                b) Sodium Acetate  
 c) Calcium Sulphate                 d) None of the above
- 278. Chromite ore is concentrated by**  
 a) Froth floatation                    b) Magnetic separation  
 c) Gravity Process                    d) ion exchange
- 279. Coloured glasses for goggles contain**  
 a) Ferrous Oxide                        b) Lanthanide Oxide  
 c) Nickel Oxide                         d) Ferric Oxide
- 280. In which of the following things liquid wax gets dissolved?**  
 a) Water                                  b) Turpentine  
 c) Kerosene                              d) None of the above
- 281. The furnace used in the preparation of Chromium is**  
 a) Blast furnace                        b) Bessemer converter  
 c) Open heath                            d) Reverberatory furnace
- 282. Who was the first to prepare soda water?**  
 a) Josepy Priestley                      b) Benjamin Christopher  
 c) Avagadro                              d) Hopman
- 283. Molish's Test is used to**  
 a) measure acidity of a solution  
 b) detect carbohydrates in a solution  
 c) identify certain elements in a solution  
 d) check traces of alkali in a solution

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273. D	274. A	275. B	276. D	277. C	278. C
279. B	280. B	281. D	282. A	283. B	

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284. Which of the following sodium separates gold?  
 a) Sodium carbide                      b) Sodium nitrate  
 c) Sodium cyanide                      d) Sodium sulphide
285. Who first converted chlorine gas into liquid chlorine?  
 a) Faraday                                  b) Sorensen  
 c) Salk                                        d) Priestley
286. What will be the colour when hydrogen burns in the air?  
 a) Yellow                                    b) Violet  
 c) Blue                                        d) No colour
287. The electrolyte used for the purification of chromium is  
 a) chromium nitrate                      b) chromium sulphate  
 c) chromium chloride                      d) chromium oxalate
288. What is an alternative disinfectant to chlorine?  
 a) Ozone                                      b) Carbon dioxide  
 c) Blue Vitriol                              d) Sulphuric Acid
289. At what temperature oxygen gets liquefied?  
 a)  $-183^{\circ}\text{C}$                                   b)  $-10^{\circ}\text{C}$   
 c)  $32.3^{\circ}\text{C}$                                       d) None of the above
290. What type of basic is phosphorus acid?  
 a) monobasic                                  b) dibasic  
 c) tribasic                                      d) tetrabasic
291. Solution of ammonium chloride in water is  
 a) Acidic                                        b) Basic  
 c) Natural                                        d) Colloidal
292. Gypsum is the ore of  
 a) Magnesium                                  b) Calcium  
 c) Copper                                        d) Lead
293. Who introduced the term pH?  
 a) Faraday                                      b) Arthenius  
 c) Sorensen                                      d) Debye
294. Name the instrument used to determine the volume changes in chemical reaction.  
 a) Eudiometer                                  b) Pipette  
 c) Ammeter                                      d) Lactometer
295. What type of salt is Mohr's Salt?  
 a) Complex Salt                                  b) Double Salt  
 c) Mixture                                        d) None of the above

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284. C	285. A	286. C	287. C	288. A	289. A
290. D	291. A	292. B	293. C	294. A	295. C

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307. A    308. A    309. B    310. A    311. D    312. C  
313. B    314. D    315. A    316. B    317. A



- 318. Teflon is a polymer made from**  
 a) Ethylene                      b) Tetrafluoroethylene  
 c) Propylene                    d) Hexafluoropropylene
- 319. Which one of the following elements does not occur in sea water?**  
 a) Magnesium                    b) Chlorine  
 c) Hydrogen                      d) Selenium
- 320. Who invented the electrolytic method of producing aluminium?**  
 a) C.M. Hall                      b) Mendelov  
 c) Sir Humphrey Davy          d) None of the above
- 321. The boiling point of water having salt impurities is**  
 a)  $100^{\circ}\text{C}$                       b) higher than  $100^{\circ}\text{C}$   
 c) lower than  $100^{\circ}\text{C}$           d) none of the above
- 322. Which one of the following is not used to rust iron?**  
 a) Mercury                        b) Nitrous Oxide  
 c) Zinc                              d) Sodium
- 323. Which one of the following is used to extract marble?**  
 a) Limestone                    b) Quartz  
 c) Silica                            d) None of the above
- 324. Name the element which is found in a free state.**  
 a) Gold                            b) Tin  
 c) Aluminium                    d) Steel
- 325. Name the metalloid in the following.**  
 a) Aluminium                    b) Gold  
 c) Copper                         d) None of the above
- 326. What is poor man's silver?**  
 a) Aluminium                    b) Caustic soda  
 c) Magnesium                    d) None of the above
- 327. Which is used in making metal currency?**  
 a) Copper                         b) Silver  
 c) Iron                              d) Bismuth
- 328. Noble metals are**  
 a) Elements that do not form compounds ordinarily  
 b) Very light weight metals  
 c) Metals that do not corrode or tarnish in air or water  
 d) Metals that do not form compounds ordinarily

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318. B	319. D	320. B	321. C	322. B	323. A
324. A	325. A	326. A	327. B	328. A	

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- 340. Vinegar is prepared by the**  
 a) Fuming of date palms      b) Fermentation of rotten grapes  
 c) Fermentation of apple cider in the presence of air  
 d) Dehydration of wine
- 341. Which of the following is incorrect?**  
 a) Potassium : Ka      b) Mercury : Hg  
 c) Silver : Ag      d) Sodium : Na
- 342. In order to prevent corrosion, iron pipes are often coated with a layer of zinc. This process is known as**  
 a) Electroplating      b) Annealing  
 c) Galvanisation      d) Vulcanisation
- 343. Electroplating does not help**  
 a) Give fine shining to the surface  
 b) Give shining appearance  
 c) The metal to become hard  
 d) Protect the metal against corrosion
- 344. Lipids are**  
 a) fatty acids      b) hormones  
 c) enzymes      d) none of the above
- 345. Important ore of Nickel is**  
 a) Pentlandite      b) Nickel sulphate only  
 c) Nickel Carbonate only      d) Nickel sulphide only
- 346. Which one of the following is used for dating archaeological specimens in wood, bones and shells?**  
 a) Uranium-238      b) Argon isotope  
 c) Carbon-14      d) Strontium - 90
- 347. Given below are two statements one labelled as Assertion (A) and the other labelled as Reason (R):**  
**Assertion (A) :** Ozone hole poses serious health hazards for life on the earth.  
**Reason (R) :** The CFCs destroy the Ozone layer.  
**In the context of the above two statements, which one of the following is correct?**  
 a) Both A and R are true and R is the correct explanation of A  
 b) Both A and R are true, but R is not a correct explanation of A  
 c) A is true, but R is false      d) A is false, but R is true.

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340. B    341. A    342. C    343. A    344. A    345. A  
 346. C    347. B

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357. Which one of the following lists four types of coal arranged in the increasing order of their carbon content?
- Peat, Lignite, Bituminous, Anthracite
  - Peat, Bituminous, Lignite, Anthracite
  - Lignite, Peat, Bituminous, Anthracite
  - Peat, Anthracite, Lignite, Bituminous
358. A compound can be prepared by passing
- oxygen over platinum at  $100^{\circ}\text{C}$
  - nitrogen over copper turnings at  $100^{\circ}\text{C}$
  - steam over iron at  $100^{\circ}\text{C}$
  - carbon dioxide over lead at  $100^{\circ}\text{C}$
359. In which one of the following, the symbol of the element is not correctly matched?
- | Element     | Symbol |
|-------------|--------|
| a) Tin      | - Ti   |
| b) Rhenium  | - Re   |
| c) Antimony | - Sb   |
| d) Tungsten | - W    |
360. Which one of the following equations is not correctly written?
- $2\text{CuSO}_4 + 4\text{KI} \rightarrow \text{Cu}_2\text{I}_2 + \text{K}_2\text{SO}_4$
  - $\text{AgNO}_3 + \text{KCNS} \rightarrow \text{AgCNS} + \text{KNO}_3$
  - $2\text{H}_3\text{PO}_4 + 3\text{Ca}(\text{OH})_2 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + 6\text{H}_2\text{O}$
  - $\text{K}_2\text{Cr}_2\text{O}_7 + 4\text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{Cr}_2(\text{SO}_4)_3 + 4\text{H}_2\text{O} + 3(\text{O})$
361. Ultraviolet radiation of the sun does not reach the earth extensively as the upper layers of the atmosphere contain
- oxygen
  - ozone
  - carbon monoxide
  - fluorocarbons
362. Given below are some methods of preparation of gases, three of which are correct and one incorrect. Which one is incorrect?
- Addition of dilute sulphuric acid to zinc : Hydrogen
  - Heating of ammonium nitrate : Nitrogen
  - Addition of hydrochloric acid to marble chips : Carbon dioxide
  - Heating a mixture of potassium chlorate and manganese dioxide : Oxygen

357. A    358. C    359. A    360. A    361. B    362. B

**363. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion(A) :** Carbon dioxide is prepared by burning carbon or by the reaction between a carbonate and an acid or by the decomposition of limestone.

**Reason(R) :** In all these methods of preparation of  $\text{CO}_2$  the elements carbon and oxygen are available in a fixed ratio of 3:8.

**In the context of the above two statements which one of the following is correct?**

- a) Both A and R are true and R is a correct explanation of A
- b) Both A and R are true, but R is not a correct explanation of A
- c) A is true but R is false.
- d) A is false but R is true

**364. Which of the following statements is/are true?**

- I. The process of oxidation leads to a gain of electrons.
- II. The process of oxidation leads to a loss of electrons.
- III. The process of reduction leads to a gain of electrons.
- IV. The process of reduction leads to a loss of electrons.

**Select the correct answer from the codes given below:**

- a) I and IV
- b) II and III
- c) I only
- d) IV only

**365. Aqueous solutions of which one of the following salts would be acidic?**

- I.  $\text{AlCl}_3$
- II.  $\text{BaSO}_4$
- III.  $\text{NaCl}$
- IV.  $\text{FeCl}_3$

**Select the correct answer by using the codes given below:**

- a) II and III
- b) I and IV
- c) III and IV
- d) II and IV

**366. Which one of the following acids is used for etching glass?**

- a)  $\text{HIO}_4$
- b)  $\text{HBrO}_3$
- c)  $\text{H}_2\text{F}_2$
- d)  $\text{HClO}_4$

**367. The number of electrons in  $\text{O}^{18}$ , an isotope of oxygen, is**

- a) 8
- b) 6
- c) 12
- d) 10

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363. C    364. B    365. B    366. C    367. A

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- 368.** The valency of carbon in oxalic acid ( $\text{H}_2\text{C}_2\text{O}_4$ ) is  
a) 1                                      b) 2  
c) 3                                      d) 4
- 369.** Finger-prints on paper can be made visible by spraying a solution of  
a) sodium thiosulphate            b) silver nitrate  
c) ninhydrin                          d) ferric chloride
- 370.** Sodium thiosulphate is used in photography to  
a) soften the film                      b) develop the film  
c) dissolve silver                      d) dissolve silver halide
- 371.** Which of the following processes is unsuitable for softening water possessing temporary hardness?  
a) Boiling  
b) Filtration  
c) Adding calcium hydroxide  
d) Distillation
- 372.** Soap is prepared by boiling caustic soda with  
a) Alcohol                                b) Kerosene oil  
c) Glycerine                              d) Fats
- 373.** Match List-I with List-II and select the correct answer by using the codes given below the lists:

### List-I

**(Minerals)**

- A) Chile saltpetre  
B) Fluorospars  
C) Calamine  
D) Cinnabar

### List-II

**(Elements)**

- 1) Mercury
- 2) Zinc
- 3) Sodium
- 4) Calcium

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 4 | 1 | 2 |
| b) | 3 | 4 | 2 | 1 |
| c) | 2 | 1 | 4 | 3 |
| d) | 2 | 3 | 4 | 1 |

- 374.** The formula for washing soda is
- a)  $\text{Na}_2\text{CO}_3$                       b)  $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
- c)  $\text{Na}_2\text{CO}_3 \cdot 7\text{H}_2\text{O}$           d)  $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$

368. D    369. C    370. D    371. D    372. D    373. B  
374. D

375. Match List-I with List-II and select the correct answer by using the codes given below the lists:

List-I (Substance)	List-II (Use)
A) Diamond	1) Fertilizer
B) Ammonium agent	2) Oxidizing sulphate
C) Sodium periodate	3) Dry cells
D) Manganese dioxide	4) Abrasive

Codes:

	A	B	C	D
a)	4	1	3	2
b)	4	1	2	3
c)	1	4	2	3
d)	1	4	3	2

376. Match List-I with List-II and select the correct answer by using the codes given below the lists:

List-I (Textile fibres)	List-II (Chemical nature)
A) Nylon	1) Polyester
B) Terylene	2) Cellulose
C) Cotton	3) Protein
D) Silk	4) Polyamide

Codes:

	A	B	C	D
a)	4	1	2	3
b)	4	3	2	1
c)	2	1	4	3
d)	2	1	3	4

377. Which of the following is an element?

- |           |              |
|-----------|--------------|
| a) Silica | b) Magnesium |
| c) Glass  | d) Quartz    |

378. The function of a catalyst in a reaction is to

- decrease the rate of the reaction
- increase the rate of the reaction
- increase the pressure of the reactants
- decrease the pressure of the reactants

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375. B    376. A    377. B    378. B

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- 379. The acid used in car battery is**  
 a) Hydrochloric acid      b) Boric acid  
 c) Sulphuric acid      d) Carbonic acid
- 380. What is copper pyrites?**  
 a)  $\text{CuPtS}_3$       b)  $\text{CuFeS}_2$   
 c)  $\text{Cu}_2\text{O}$       d)  $\text{Cu}_2\text{S}$
- 381. Consider the following:**  
 I. 0.1 M hydrochloric acid  
 II. 0.1 M sodium hydroxide  
 III. 0.1 M acetic acid  
 IV. Water  
 Their pH values will be such that  
 a)  $\text{I} < \text{III} < \text{IV} < \text{II}$       b)  $\text{I} < \text{III} < \text{II} < \text{IV}$   
 c)  $\text{III} < \text{I} < \text{IV} < \text{II}$       d)  $\text{III} < \text{I} < \text{II} < \text{IV}$
- 382. Which one of the following sets of elements form ferrocides?**  
 a) Hydrogen and Silicon      b) Silicon and Sulphur  
 c) Sodium and Silicon      d) Hydrogen and Sodium
- 383. Avogadro's Law is obeyed by**  
 a) solids      b) liquids  
 c) gases      d) solids, liquids and gases
- 384. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**  
**Assertion (A) :** Iron exposed to air gets rusted.  
**Reason (R) :** An electrochemical cell is developed in iron.  
**In the context of the above two statements, which one of the following is correct?**  
 a) Both A and R are true, and R is the a correct explanation of A  
 b) Both A and R are true, but R is not a correct explanation of A  
 c) A is true but R is false  
 d) A is false but R is true
- 385. Which one of the following has been denoted as 'Green Fuel'?**  
 a) CNG      b) Gobar gas  
 c) Unleaded petrol      d) LPG
- 386. Benzene diazonium chloride, when boiled with water produces**  
 a) benzyl alcohol      b) carbolic acid  
 c) salicylic acid      d) m-cresol

379. C    380. B    381. A    382. C    383. C    384. A  
 385. A    386. B

- 387. Chlorobenzene can be prepared by**  
a) Kolbe's reaction                      b) Friedel-Crafts reaction  
c) Sandmeyer's reaction                d) Wurtz reaction
- 388. All of the following noble gases are present in the atmosphere, except**  
a) Argon                                      b) Helium  
c) Radon                                      d) Xenon
- 389. Which of the following factors influence the rate of chemical reactions?**  
a) Concentrations of reactants  
b) Presence of catalyst  
c) Temperature  
d) All of these
- 390. Which one of the following will not undergo diazotisation?**  
a) m-toluidene                              b) aniline  
c) p-aminophenol                         d) benzyl amine
- 391. What makes the water a very convenient medium for chemical reactions and biological processes?**  
a) It has a low specific heat  
b) It has a reasonably long temperature range between its freezing point and boiling point  
c) It has greater density as liquid than when it is in solid state  
d) None of these
- 392. Which one of the following statements is not correct?**  
a) A liquid is not rigid but has definite volume and intrinsic shape  
b) A gas has no rigidity, intrinsic shape or intrinsic volume  
c) A solid is rigid, occupies definite volume and possesses definite shape  
d) All these statements are correct
- 393. How many kinds of rays do radioactive elements emit?**  
a) Two                                         b) Three  
c) Four                                         d) Five
- 394. The process which brings about chemical decomposition of a substance by water is called**  
a) Hydrogenation                            b) Hypotrophy  
c) Hybridisation                             d) Hydrolysis
- 

387. C    388. C    389. D    390. D    391. B    392. A  
393. B    394. D

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- 395. Most reactive element among the following is**
- a) Fluorine                      b) Iodine  
c) Nitrogen                     d) Oxygen
- 396. All of the following are ores of copper, except**
- a) Cuprite                        b) Cinnabar  
c) Copper pyrites              d) Malachite
- 397. Which of the following has the lowest ionisation potential?**
- a) Bromine                      b) Chlorine  
c) Fluorine                      d) Iodine
- 398. The extraction of metals from the sulphide ores is usually done by**
- a) Electrolysis                  b) Smelting process  
c) Metal displacement method  
d) Froth floatation process
- 399. Water is a good solvent for many salts because it**
- a) Is neutral  
b) Is a poor conductor of electricity  
c) Can be easily converted into steam  
d) Has high dielectric constant and thus can loosen the bonds between the ions.
- 400. Electrostatic repulsion force in a molecule is due to**
- a) Repulsion between the electrons for electrons and nuclei for nuclei contained in two different molecules  
b) Repulsion between protons of the nuclei of the molecules  
c) Repulsion between electrons of the molecule or molecules  
d) None of the above
- 401. In a solid**
- a) Order effect and disorder effects are equal  
b) Order effect of cohesive forces is less than disorder effects of thermal agitation of the molecules  
c) Order effect of cohesive forces is greater than disorder effect of thermal agitation of the molecules  
d) None of the above
- 402. Liquid is characterised by its**
- a) Fluidity  
b) No definite shape but definite volume  
c) Capacity to dissolve the solids  
d) All of these properties

395. A    396. B    397. D    398. B    399. D    400. A  
401. C    402. D

403. D    404. C    405. C    406. B    407. A    408. C  
409. A    410. A    411. C



- 412. Glass is mostly produced by heating to about 1400 degree Centigrade**  
 a) Limestone and soda ash    b) Soda ash and silica  
 c) Silica and limestone        d) Limestone, silica and soda ash
- 413. The temperature at which a real gas obeys the ideal gas laws over a wide range of pressure is called**  
 a) Inversion temperature    b) Reduced temperature  
 c) Boyle temperature        d) Critical temperature
- 414. Kinetic energy of translation of an ideal gas is dependent upon**  
 a) Pressure of the gas        b) Volume of the gas  
 c) Temperature of the gas    d) Nature of the gas
- 415. Mean free path of gas molecules is dependent on**  
 a) Viscosity of the gas        b) Velocity of gas  
 c) Volume of the gas        d) Temperature of the gas
- 416. Which of the following elements has 92 as the atomic number?**  
 a) Lead                          b) Platinum  
 c) Thorium                      d) Uranium
- 417. Carbon dioxide is**  
 a) An acidic oxide              b) A basic oxide  
 c) A neutral oxide              d) An atmospheric oxide
- 418. The process of union of two or more molecules of a substance to form a large single molecule is called**  
 a) Diffusion                      b) Synthesis  
 c) Fusion                        d) Polymerisation
- 419. Tritium is composed of**  
 a) One proton, two electrons and one neutron  
 b) Two protons and one electron  
 c) One proton, one electron and one neutron  
 d) One proton, one electron and two neutrons
- 420. Nitrolime is a mixture of**  
 a) Nitrogen and aluminium    b) Calcium cyanamide and coke  
 c) Calcium and nitrogen       d) Calcium carbide and nitrogen
- 421. A substance of high temperature glows because of**  
 a) High kinetic energy of the atoms  
 b) Vibration of the molecules  
 c) Excitation of electrons within the atomic nucleus  
 d) All of the above

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412. D	413. C	414. C	415. B	416. D	417. A
418. D	419. D	420. D	421. C		

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428. Which of the following metals does not get affected by nitric acid?
- Copper
  - Gold
  - Mercury
  - Silver
429. The first attempt to explain the structure of the hydrogen atom was made by
- John Dalton
  - Albert Einstein
  - Stanislao Cannizzar
  - Niels Bohr
430. The atomic number of an element is equal to the number of
- Neutrons present in the nucleus
  - Electrons revolving around the nucleus in different orbits
  - Isotopes
  - None of these
431. The rate constant for a first order reaction depends on
- Initial concentration of reactants
  - Time of reaction
  - Extent of reaction
  - Temperature
432. The series in which the electrode potentials of metals are arranged in an order is known as
- Electrode potential series
  - Electrical conductivity series
  - Electrochemical series
  - Chemical affinity series
433. Which of the following copper alloys is used for the manufacture of caps of cartridges?
- Brass
  - Bronze
  - Gun metal
  - German silver
434. Which of the following copper alloys is used for the manufacture of control valves?
- Brass
  - Bronze
  - Gun metal
  - German silver
435. Which of the following iron alloys is used for the manufacture of pendulum rods?
- Brass
  - Bell metal
  - Stainless steel
  - Aluminium bronze
436. Which of the following aluminium alloys is used for the manufacture of pressure cookers?
- Aluminium bronze
  - Duralumin
  - Bell metal
  - None of these

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428. B    429. D    430. B    431. D    432. C    433. A  
 434. B    435. C    436. B

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437. C   438. A   439. C   440. A   441. A   442. C  
443. C   444. B   445. A

446. In the laboratory preparation of chlorine, manganese dioxide  
 a) Functions as a catalyst      b) Gets oxidised  
 c) Gets reduced                  d) None of these
447. The process of bleaching by chlorine is called  
 a) Decomposition                  b) Oxidation  
 c) Reduction                      d) Substitution
448. Which among the following non-metals is a liquid?  
 a) Bromine                          b) Carbon  
 c) Phosphorus                      d) Sulphur
449. Which of the following statements about the physical properties of metals is not correct?  
 a) All metals are solid except mercury  
 b) Most of the metals are hard except sodium and potassium  
 c) They are not malleable  
 d) Hydrogen and chlorine
450. Equilibrium established in a system in which two or more phases occur is called  
 a) Homogeneous equilibrium  
 b) Heterogeneous equilibrium  
 c) Stable equilibrium  
 d) None of these
451. The equilibrium constant decreases with rise of temperature in the case of  
 a) Endothermic reaction      b) Exothermic reaction  
 c) Heterogeneous reaction   d) Homogeneous reaction
452. Semi-permeable membrane permits the flow of  
 a) Solute through it              b) Solvent through it  
 c) Both (a) and (b) above      d) None of these
453. The osmotic pressure of a solution increases if  
 a) Volume is increased          b) Temperature is increased  
 c) Number of molecules of solute is increased  
 d) None of these
454. The law which states that the amount of gas dissolved in a liquid is proportional to its partial pressure is  
 a) Dalton's law                      b) Gay Lussac's law  
 c) Henry's law                      d) Raoult's law

---

446. C	447. B	448. A	449. C	450. B	451. B
452. B	453. C	454. C			

---

455. A   456. C   457. A   458. B   459. A   460. B  
461. A   462. A   463. B





470. Oxygen exhibits positive oxidation state in its compounds with

- |             |             |
|-------------|-------------|
| a) Chlorine | b) Fluorine |
| c) Xenon    | d) Platinum |

471. Passing excess  $\text{CO}_2$  into lime water yields

- |                             |                                |
|-----------------------------|--------------------------------|
| a) $\text{CaCO}_3$          | b) $\text{Ca}(\text{HCO}_3)_2$ |
| c) $\text{Ca}(\text{OH})_2$ | d) $\text{CaO}$                |

472. Hydrogen peroxide does not act as a/an

- |                      |                    |
|----------------------|--------------------|
| a) reducing agent    | b) oxidising agent |
| c) dehydrating agent | d) bleaching agent |

473. Which one of the following acts both as a Bronsted acid and a base?

- |                            |                     |
|----------------------------|---------------------|
| a) $\text{H}_2\text{CO}_3$ | b) $\text{HCO}_3^-$ |
| c) $\text{CO}_3^{2-}$      | d) $\text{CO}_2$    |

474. The element having different values of atomic weight, equivalent weight and molecular weight is

- |              |           |
|--------------|-----------|
| a) potassium | b) neon   |
| c) carbon    | d) oxygen |

475. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):

Assertion (A) : The process of slow cooling of glass is called annealing.

Reason (R) : Annealing process is carried out only for flint glass.

In the context of the above two statements, which one of the following is correct?

- |   |
|---|
| a) Both A and R are true, and R is the correct explanation of A   |
| b) Both A and R are true, but R is not a correct explanation of A |
| c) A is true, but R is false                                      |
| d) A is false, but R is true                                      |

476. Which of the following cause permanent hardness of water?

- |                                |                     |
|--------------------------------|---------------------|
| I. $\text{Ca}(\text{HCO}_3)_2$ | II. $\text{MgCO}_3$ |
| III. $\text{CaSO}_4$           | IV. $\text{MgCl}_2$ |

Select the correct answer from the codes given below:

Codes:

- |               |                   |
|---------------|-------------------|
| a) I and II   | b) II and III     |
| c) III and IV | d) II, III and IV |

---

470. B    471. B    472. C    473. B    474. D    475. C  
476. B

---

477. Which has the highest basic nature?

- a) diphenyl amine                      b) aniline  
c) triphenyl amine                      d) methyl amine

478. Match List-I with List-II and select the correct answer using the codes given below the lists

List-I (Metal)	List-II (Ore)
A) Aluminium	1) Pitchblende
B) Iron	2) Lepidolite
C) Lithium	3) Haematite
D) Uranium	4) Bauxite

Codes:

	A	B	C	D
a)	4	3	2	1
b)	4	3	1	2
c)	3	4	1	2
d)	3	4	2	1

479.  $\text{Na}^+$  has a higher ionization potential than Na atom because  $\text{Na}^+$  has a higher number of

- a) protons                                      b) electrons  
c) neutrons                                      d) positrons

480. Which one of the following does not have a tetrahedral structure?

- a) Graphite                                      b) Diamond  
c) Ammonia                                      d) Methane

481. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):

**Assertion (A) :** When a metal atom forms a cation, its size decreases.

**Reason (R) :** During cation formation, the proton-to-electron ratio decreases.

In the context of the above two statements, which one of the following is correct?

- a) Both A and R are true, and R is the correct explanation of A  
b) Both A and R are true, but R is not a correct explanation of A  
c) A is true, but R is false  
d) A is false, but R is true

---

477. C    478. A    479. A    480. B    481. C

---

482. Given below are two statements, one labelled as Assertion (A), and the other labelled as Reason (R):

Assertion (A) : Coke is almost pure carbon.

Reason (R) : Strong heating of raw coal in the absence of air removes organic volatiles.

In the context of the above two statements, which one of the following is correct?

- Both A and R are true, and R is the correct explanation of A
  - Both A and R are true, but R is not a correct explanation of A
  - A is true, but R is false
  - A is false, but R is true
483. The number of molecules present in 2 grams of hydrogen is
- $3.012 \times 10^{23}$
  - $6.023 \times 10^{23}$
  - $9.035 \times 10^{23}$
  - $12.046 \times 10^{23}$
484. Water is in a liquid form whereas hydrogen sulphide is a gas at ordinary temperature. This is due to the presence of
- covalent bond in water
  - ionic bond in hydrogen sulphide
  - hydrogen bonding in water
  - hydrogen bonding in hydrogen sulphide
485. In the manufacture of safety matches, which of the following materials are used to coat the two sides of the match box?
- |                   |                        |
|-------------------|------------------------|
| I. Red phosphorus | II. Potassium chlorate |
| III. Glass powder | IV. Gum                |
- Select the correct answer using the codes given below:
- I and III
  - I, II and IV
  - II, III and IV
  - I, III and IV
486. In some nuclear reactors, heavy water is used as a moderator. The heavy water is
- water cooled at  $4^{\circ}\text{C}$
  - water in which hydrogen is replaced by helium
  - water in which some lead salts are dissolved
  - water with deuterium instead of hydrogen atoms
487. Which one of the following carbocations is most stable?
- Allyl carbocation
  - Methyl carbocation
  - Benzyl carbocation
  - Tertiary butyl carbocation

---

482. D    483. B    484. C    485. B    486. D    487. C

---

- 488. Dry ice is**  
 a) super-cooled ice                      b) solid water with zero humidity  
 c) solid carbon dioxide                d) solidified ammonia
- 489. Consider the following statements:**  
 In nuclear power reactors  
 I. Uranium-235 is used as the fission material.  
 II. Graphite is used as a moderator.  
 III. Rods of lead are used to control the rate of nuclear reaction.  
**Which of the above statements are correct?**  
 a) I, II and III                              b) I and II  
 c) II and III                                 d) I and III
- 490. Which one of the following is the major cause of depletion of ozone strata of the atmosphere?**  
 a) Carbon dioxide                        b) Chlorofluorocarbon  
 c) Sulphur dioxide                        d) Nitrogen oxide
- 491. The volume of 1N sodium hydroxide required to neutralise 10 ml of 0.5N hydrochloric acid will be**  
 a) 5 ml                                        b) 10 ml  
 c) 15 ml                                       d) 20 ml
- 492. A mixture of ethyl alcohol and water can be separated into individual components by**  
 a) separation of layers in a separatory funnel  
 b) crystallisation  
 c) chromatography  
 d) fractional distillation
- 493. Fullerene is made up of carbon only. Its structure is**  
 a) linear (one-dimensional)  
 b) planar (two-dimensional)  
 c) such that all the faces are hexagonal in 3-dimensional arrangement  
 d) such that some faces are hexagonal while others are pentagonal in 3-dimensional arrangement
- 494. Which one of the following has the lowest percentage of carbon?**  
 a) Mild steel                                b) Soft steel  
 c) Hard steel                                d) Wrought iron

---

488. C    489. A    490. B    491. A    492. D    493. D  
 494. D

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## • BIOLOGY •

- One of the characteristics that differentiates procaryotes from eucaryotes is
  - RNA
  - DNA
  - Protein
  - Membrane-bound organelles
- Match List I with List II correctly and select your answer using the codes given below:

### List I (Pathogens)

- Entamoeba histolytica*
- Clostridium tetani*
- Bordetella pertussis*
- Wuchereria bancrofti*

### List II (Diseases)

- Whooping cough
- Amoebiasis
- Filariasis
- Tetanus

Codes:

	A	B	C	D
a)	2	4	1	3
b)	2	4	3	1
c)	4	2	1	3
d)	2	1	3	4

- Which of the following is correctly matched?
  - Helps in breathing - Stomach
  - Stores red blood cells - Spleen
  - Stores glycogen - Diaphragm
  - Protein digestion occurs here - Liver
- Oxytocin is secreted by
  - adrenal gland
  - pituitary gland
  - ovary
  - testis
- Which of the following is correctly matched?
  - Coeloblastula - Bilateral symmetry
  - Disco blastula - Pig embryo
  - Placenta - Extra-embryonic membrane
  - Epiboly - Movement of cells during embryo formation

Ans: 1. C    2. A    3. B    4. B    5. D

6. It is believed that life evolved in its early stage under oxygen-free condition. Which of the following organisms might have been able to survive in that environment?
  - a) Obligate anaerobic bacteria
  - b) Obligate halophytes
  - c) Lichens
  - d) Thermophilic algae
7. Spermatids derive the nourishment from
  - a) nucleus
  - b) cytoplasm
  - c) ciliated epithelial cell
  - d) Sertoli cell
8. Mitosis actually means
  - a) Division of cytoplasm only
  - b) Division of nucleus only
  - c) Reduction in number of chromosomes
  - d) Both nuclear and cytoplasmic divisions
9. Mitochondria will be found in abundance, where there is
  - a) A wound activity in the body
  - b) Maximum activity in the body
  - c) Least activity in the body
  - d) Average activity in the body
10. The shape of human immunodeficiency (HIV) virus is
  - a) Spherical in shape
  - b) Rod-like in shape
  - c) Spiral-like in shape
  - d) Comma-like in shape
11. Match List with List II correctly and select your answer using the codes given below:

**List I**

- A) Virus
- B) Bacteria
- C) Nucleus
- D) Cell

**List II**

1. Robert Hooke
2. Robert Brown
3. Dmitry Ivanowsky
4. Antonie van Leeuwenhoek

**Codes:**

	A	B	C	D
a)	3	4	2	1
b)	4	2	1	3
c)	1	2	3	4
d)	2	3	4	1

6. A    7. C    8. D    9. B    10. A    11. A

12. **Polyploidy is most common in**
  - a) Animal Kingdom
  - b) Plant Kingdom
  - c) Fungi
  - d) Protista
13. **The process of transfer of desirable characters from one species to other is known as**
  - a) introduction
  - b) selection
  - c) emasculation
  - d) hybridization
14. **Mycotoxins are pollutants because they affect most commonly**
  - a) water
  - b) soil
  - c) food
  - d) air
15. **Nitrogen fixation is generally brought about by**
  - a) Bacteria
  - b) Bacteria and blue-green algae
  - c) Algae
  - d) Fungi
16. **Which one of the following is correctly matched?**
  - a) Primary Consumer - Locust
  - b) Secondary Consumer - Plants
  - c) Tertiary Consumer - Snake
  - d) Products - Kite
17. **Which one of the following is correctly matched?**
  - a) Salivary gland - Gastric Juice
  - b) Liver - Amylase
  - c) Pancreas - Trypsinogen
  - d) Stomach - Bile
18. **Which one of the following is correctly matched?**
  - a) Haemoglobin is found in - Calcium
  - b) Green-plants contain - Blood
  - c) The largest gland in human body is - Liver
  - d) The most abundantly found metal in the human body - Starch
19. **Which of the organelles given below is known as "the powerhouse" of the cell?**
  - a) Lysosome
  - b) Golgi body
  - c) Mitochondrion
  - d) Ribosome
20. **The chromosome number is reduced to half during**
  - a) mitosis
  - b) meiosis
  - c) amitosis
  - d) apospory

---

12. D	13. A	14. B	15. A	16. A	17. C
18. C	19. C	20. B			

---

21. To which kingdom bacteria belong?
  - a) Plantae
  - b) Protista
  - c) Animalae
  - d) Monera
22. Which of the following micro-organisms are involved in nitrogen fixation?
  - I. Blue-green Algae
  - II. Azotobacter
  - III. Rhizobium
 Of the statements
  - a) II and III are correct
  - b) I and III are correct
  - c) I and II are correct
  - d) I, II and III are correct
23. The cytoplasm surrounding the mitochondria found in the middle piece of the sperm is called
  - a) acrosome
  - b) centrosome
  - c) microsome
  - d) manchette
24. The term "test-tube baby" refers to
  - a) a baby developed in a test-tube
  - b) an artificial baby developed in a test-tube
  - c) *in vitro* fertilization and embryo replacement
  - d) a baby developed from ovum without fertilization
25. Hyaluronidase is found in
  - a) the acrosome of mammalian sperm
  - b) the centrosome of mammalian ovum
  - c) the lysosome of ovum
  - d) the lysosome of sperm
26. The chromosome composition of man is
  - a) 44AA + XY
  - b) 44AA + XX
  - c) 22A + X
  - d) 22A + Y
27. Which one of the following is correctly matched?
  - a) Platyhelminthes - Sponge
  - b) Ciliophora - Paramecium
  - c) Sarcodina - Malarial parasite
  - d) Porifera - Tapeworm
28. Which one of the following is mismatched?
  - a) Salivary gland - An endocrine gland
  - b) Pancreas - Islets of Langerhans
  - c) Birds - Aves
  - d) Kidney - Ultrafiltration

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 21. D | 22. A | 23. B | 24. C | 25. A | 26. A |
| 27. B | 28. A |       |       |       |       |

29. An ecosystem has two components, namely
  - a) weeds and trees
  - b) biotic and abiotic
  - c) frogs and men
  - d) plants and animals
30. The genetic material of a cell resides in
  - a) cytoplasm
  - b) protoplasm
  - c) ribosome
  - d) DNA
31. Mutation theory was proposed by
  - a) Darwin
  - b) Morgan
  - c) Lamarck
  - d) Hugo de Vries
32. Development of a sporophyte directly from the sporophytic tissue is called
  - a) Double fertilization
  - b) Triple fusion
  - c) Apospory
  - d) Syngamy
33. Autotrophs in an ecosystem are called
  - a) producers
  - b) consumers
  - c) decomposers
  - d) abiotic constituents
34. Acromegaly is caused by irregular secretion of
  - a) Pituitary
  - b) Thyroid
  - c) Adrenal
  - d) Pancreas
35. The ABO bloodgroups were discovered by
  - a) Charles Darwin
  - b) Gregor Mendel
  - c) Karl Landsteiner
  - d) Waston
36. Identical twins are born, when
  - a) two sperms fertilize two ova
  - b) two sperms fertilize one ovum
  - c) one sperm fertilizes one ovum
  - d) one sperm fertilizes one ovum. Zygote cleaves into two cells that develop independently
37. The food which gives an athlete instant energy is
  - a) Glucose
  - b) Butter
  - c) Protein
  - d) Vitamin
38. DNA structure was first described by
  - a) Catcheside
  - b) Lederberg
  - c) Nirenberg
  - d) Watson and Crick



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46. Mark the correct statement:  
 a) All sperms fertilize all eggs  
 b) Eggs are fertilized by many sperms  
 c) Each egg is usually fertilized by one sperm  
 d) Each sperm fertilizes one egg.
47. Mark the correct statement:  
 a) Foramen magnum is in the skull  
 b) Foramen magnum is an aperture in the heart  
 c) Foramen magnum is a large hole in the voice box  
 d) Foramen magnum does not exist anywhere
48. Match List I correctly with List II and select your answer using the codes given below:
- | List I                          |  | List II              |  |
|---------------------------------|--|----------------------|--|
| A) <i>Trypanosoma gambiense</i> |  | 1) Malaria           |  |
| B) <i>Leishmania donovani</i>   |  | 2) Diarrhoea         |  |
| C) <i>Plasmodium ovale</i>      |  | 3) Sleeping sickness |  |
| D) <i>Trichomonas hominis</i>   |  | 4) Kala-azar         |  |
- Codes:
- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 4 | 1 | 2 |
| b) | 4 | 1 | 2 | 3 |
| c) | 3 | 1 | 2 | 4 |
| d) | 4 | 1 | 3 | 2 |
49. Which one of the following is correctly matched?  
 a) Charles Darwin - Theory of Parthenogenesis  
 b) Hugo de Vries - Cell theory  
 c) Lamarck - Theory of mutation  
 d) Spencer - Theory of inheritance of acquired character
50. 'Survival of the fittest' was proposed in his theory of evolution by  
 a) Darwin  
 b) Mendel  
 c) Lamarck  
 d) Hugo de Vries
51. This pteridophyte produces two kinds of spores.  
 a) Lycopodium  
 b) Selaginella  
 c) Psilotum  
 d) Adiantum

---

46. C    47. B    48. A    49. A    50. A    51. B

---

52. A plant cell differs from an animal cell in the absence of  
 a) Mitochondria                      b) Centrioles  
 c) Ribosomes                          d) Endoplasmic reticulum
53. Which of the following is not a constituent of DNA molecule?  
 a) Adenine                              b) Cytosine  
 c) Thymine                             d) Uracil
54. Match List I with List II and select the correct answer using the codes given below:
- | List I       |  | List II              |  |
|--------------|--|----------------------|--|
| a) Vitamin A |  | 1) Antirachitic      |  |
| b) Vitamin B |  | 2) Antisterilitic    |  |
| c) Vitamin D |  | 3) Antixerophthalmic |  |
| d) Vitamin E |  | 4) Antineuritic      |  |
- Codes:**
- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 4 | 1 | 2 |
| b) | 2 | 3 | 4 | 1 |
| c) | 4 | 2 | 3 | 1 |
| d) | 3 | 1 | 2 | 4 |
55. Match List I with List II and select the correct answer using the codes given below:
- | List I              |  | List II                   |  |
|---------------------|--|---------------------------|--|
| A) Free martins     |  | 1) Spemann                |  |
| B) Organisers       |  | 2) Steptoe and Edwards    |  |
| C) Rh - factor      |  | 3) Lillie                 |  |
| D) Test-tube babies |  | 4) Landsteiner and Wiener |  |
- Codes:**
- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 2 | 1 | 4 | 3 |
| b) | 3 | 2 | 1 | 4 |
| c) | 4 | 1 | 2 | 3 |
| d) | 3 | 1 | 4 | 2 |
56. Most of the red, blue and purple colours are due to a pigment called  
 a) Anthocyanin                      b) Carotene  
 c) Chlorophyll                      d) Xanthophyll

---

52. B    53. D    54. A    55. D    56. A

---





73. Mark the correct statement:

- a) The central cavity of Hydra is centrocoel
- b) The central cavity of Hydra is gastrocoel
- c) The central cavity of Hydra is coelenteron
- d) The central cavity of Hydra is gastrovascular cavity

74. Match List I with List II and select the correct answer using the codes given below the lists

List I

List II

- |                    |                                      |
|--------------------|--------------------------------------|
| A) Vegetal pole    | 1) cell of blastula                  |
| B) Blastomere      | 2) Development without fertilization |
| C) Parthenogenesis | 3) Echinoderm egg                    |
| D) Janus green     | 4) Yolk                              |

Codes:

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 3 | 2 | 4 |
| b) | 1 | 2 | 4 | 3 |
| c) | 1 | 2 | 3 | 4 |
| d) | 1 | 3 | 4 | 2 |

75. What is the correct sequence of the lifecycle of fern?

- a) Spore - sporophyte - gamete - gametophyte
- b) Zygote - gametophyte - sporophyte - spore
- c) Zygote - gametophyte - spore - sporophyte
- d) Zygote - sporophyte - spore - gametophyte

76. Identify the correct sequence of the pace-making system in human heart.

- a) A.V. node - S.A. node - Purkinji system - Bundle of His
- b) A.V. node - S.A. node - Bundle of His - Purkinji system
- c) S.A. node - A.V. node - Bundle of His - Purkinji system
- d) S.A. node - A.V. node - Purkinji system - Bundle of His

77. Consider the following statements:

Assertion (A) : In man urine is filtered in malpighian capsule

Reason (R) : Colloidal osmotic pressure of blood protein is responsible for urine filtration

Now select your answer according to the codes given below:

- a) Both A & R are true, and R is the correct explanation of A
- b) Both A & R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

73. A    74. C    75. D    76. D    77. D



78. Consider the following statements:

- I. Haemoglobin is a blood pigment of vertebrates
- II. Haemoglobin is an oxygen carrier
- III. Haemoglobin is a carbohydrate
- IV. Haemoglobin is blue in colour

Of the statements:

- a) I alone is correct
- b) I and II are correct
- c) I, II and III are correct
- d) All are correct

79. Consider the statements:

- I. Viruses are obligatory endoparasites of living cells
- II. Viruses have genetic material
- III. Viruses can be crystallized
- IV. Viruses do not have mitochondria

Of the statements:

- a) I alone is correct
- b) I and II are correct
- c) I, II and III are correct
- d) All are correct

80. Match List I with List II and select the correct answer using the codes given below the lists:

List I				List II			
A) Sex-linked inheritance				1) Brachyphalangy			
B) Lethal genes				2) Turner Syndrome			
C) Aneuploidy				3) Alkaptonuria			
D) Mutation				4) Colour blindness			

	A	B	C	D
a) 3	4	1	2	
b) 3	2	1	4	
c) 4	1	2	3	
d) 4	2	3	1	

81. Which one of the following is correctly matched?

- a) Producer - Deer
- b) Primary consumer - Leopard
- c) Secondary consumer - Grass
- d) Decomposer - Bacteria

82. The total organic matter present in an ecosystem is referred to as the

- a) Biomass
- b) Biosphere
- c) Biome
- d) Biocoenosis

78. B    79. C    80. C    81. D    82. C





103. In mammals, the skin performs all of the following functions, except
- Accessory respiratory function
  - Produces vitamin D (essential for the formation of bones and teeth) in the presence of sunlight
  - Sensory function
  - Thermo-regulatory function
104. Which of the following statements in regard to the cell theory is not correct?
- Cells arise only from pre-existing cells
  - Majority of organisms are composed of cells and cell products
  - Cells are the structural and functional units of life
  - All these statements are correct
105. Which of the following statements in regard to cells and atoms is not true?
- Both cell and atom are composed of simple components
  - Both serve as basic building blocks for more complex structure
  - Both have the ability to reproduce
  - Both exhibit variations in their properties based on different arrangements of parts
106. The function of production of fibres and matrix in the body is performed by which of the following cell types?
- Adipose cells
  - Mast cells
  - Plasma cells
  - Fibroblasts
107. Which of the following constricts or dilates the walls of blood vessels in the body?
- Heparin
  - Histamine
  - Both (a) and (b) above
  - Neither of these
108. Which of the following specialised branches of science is concerned with the study of the microscopic structure of tissues and organs?
- Cytology
  - Histology
  - Macro-ecology
  - None of these
109. Vomiting of the contents of stomach and of the upper intestinal tract is a complex reflex coordinated by the vomiting centre in the
- Medulla of the brain
  - Oesophagus
  - Small intestine
  - Stomach

103. A    104. B    105. C    106. D    107. B    108. B  
109. A

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119. Which of the following is the latest advancement in Genetic Engineering?  
 a) DNA Synthesis                      b) Gene splicing  
 c) Plasmids                                d) None of these
120. The process by which Sun rays get converted into chemical energy is called  
 a) Solar absorption                      b) Bio-conversion  
 c) Bio-synthesis                         d) Solar radiation
121. Which one of the following is hermaphrodite?  
 a) Bedbug                                  b) Hookworm  
 c) Mosquito                                d) Earthworm
122. Through which of the following are hereditary characters transmitted from one generation to another?  
 a) Endoplasmic reticulum              b) Chromosomes  
 c) Mitochondria                         d) None of these
123. Bacteriophage possesses its genetic material in  
 a) Its head                                  b) Between head and tail  
 c) In all its parts                         d) Its tail
124. In photosynthetic bacteria, in the presence of light  
 a) Oxygen is produced                  b) ADP is converted  
 c) Oxygen is never produced  
 d) None of these
125. Iron is present in the human blood in the form of a  
 a) free salt                                  b) complex  
 c) compound                                d) Mixture
126. Blood sugar is the amount of \_\_\_\_\_ in the circulating blood  
 a) Galactose                                b) Lactose  
 c) Sucrose                                  d) Glucose
127. What role is played by the layers of the dead cells of stratum corneum in the body?  
 a) Eliminate water, salts and other products.  
 b) Protect the layers of the living cells underneath from injury  
 c) Help the skin to perceive sensations of cold, heat, touch etc.  
 d) None of these
128. Which of the following produces vitamin D for the body?  
 a) Liver                                      b) Lungs  
 c) Stomach                                  d) Skin

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119. B    120. B    121. D    122. B    123. D    124. A  
 125. C    126. D    127. B    128. D

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### **b) . Vitamin B**

**d) All of these**

**130. Which of the following cell layers of the skin is made up of dead, flattened cells?**

**b) Granulosum**

**d) All the layers have live cells**

**131. Which of the following acts as an insulator against heat and cold and as a shock-absorber in the body?**

**b) Epidermis**

c) Subcutaneous fat layer      d) None of these

**132. Placentation means**

**a) Fixation of anthers to the filament**

**b) Fusion of stamens with the petals**

c) Union of sepals and petals

**d) The mode of arrangement of ovules in the ovary**

**133. A bacteriophage is .**

**a) a bacteria living on dead tissue**

**b) a virus that attacks bacteria and destroys their host**

**c) a bacteria that fights viruses**

**d) a blue-green alga**

**134. Why is chemical energy the most suitable form of energy for living systems?**

a) It can be easily transferred    b) It can be easily transformed

c) It can be easily stored      d) All of these

**135. Which set of insects is useful to man?**

a) Honeybee, silk moth, dragonfly

b) Honeybee, locust, lac insect

c) Lac insect, silk moth, honeybee

**d) Rice weevil, silk moth, honeybee**

**136. Protein synthesis takes place in**

### a) Ribosomes

### **b) Plastids**

### c) Mitochondria

d) Lysosomes

**137. Which of the following is the first phase of mitotic division?**

### a) Anaphase

**b) Metaphase**

### c) Prophase

**d) Telophase**

129. C   130. A   131. C   132. D   133. B   134. D

135. C    136. A    137. C

138. Which of the following branches of science is concerned with the classification of organisms?
- a) Agronomy
  - b) Genealogy
  - c) Histology
  - d) Taxonomy
139. For his studies on hybridisation, Gregor Mendel made use of
- a) Cow-peas
  - b) Garden-peas
  - c) Sweet-peas
  - d) Winged-beans
140. The skin has various types of epidermal and dermal modifications in different vertebrates. In this regard, which of the following statements is not correct?
- a) Birds have feathers
  - b) The skin of reptiles and fishes is naked but is kept moist with mucus secretion
  - c) Nails, hooves, antlers, horns, claws are examples of skin derivatives
  - d) Mammals have hair
141. Leucocytes and lymphocytes perform which of the following functions in the body?
- a) Constrict or dilate the walls of blood vessels and prevent coagulation of blood respectively
  - b) Synthesise antibodies
  - c) Ingest all debris, bacteria and foreign matter
  - d) Produce fibres and matrix respectively
142. Metabolic processes yield substances which are harmful to the body. These are rendered harmless in the
- a) Small intestine
  - b) Liver
  - c) Pancreas
  - d) Stomach
143. When the level of bile pigments increases in the plasma, which of the following is/are stained yellow (called jaundice)?
- a) White of the eye only
  - b) Mucus membranes and skin
  - c) Both (a) and (b) above
  - d) None of these
144. In which of the following human organs does fat consumed gets broken down into fatty acids and glycerol?
- a) Duodenum
  - b) Oesophagus
  - c) Stomach
  - d) Small intestine

138. D    139. B    140. B    141. C    142. B    143. C  
144. D

145. A 146. C 147. B 148. B 149. D 150. A  
151. A 152. B 153. A

154. What is the distance covered by blood circulation in our body?  
 a) 20 miles                      b) 268 m  
 c) 168 m                         d) None of the above
155. Name the most important organ in our body.  
 a) Brain                            b) Heart  
 c) Lungs                         d) None of the above
156. Who discovered the effect of ultra-violet rays?  
 a) Bunsen                         b) Fuisen  
 c) Curie                          d) None of the above
157. Who invented ironlung?  
 a) Philip Brinker                b) George Beregove  
 c) Dr. P.K. Sen                  d) B.C. Roy
158. Where was India's first biological park installed?  
 a) Tamil Nadu                    b) Uttar Pradesh  
 c) Kerala                         d) None of the above
159. The pancreas secretes  
 a) Insulin                         b) Bile juice  
 c) Vitamin A                      d) None of the above
160. Which controls muscles?  
 a) Will                              b) Brain  
 c) Heart                          d) None of the above
161. What is odontography?  
 a) Study of tongue                b) Study of nose  
 c) Study of teeth                 d) Study of bones
162. Which vitamin keeps sterility?  
 a) Vitamin K                      b) Vitamin E  
 c) Vitamin B<sub>12</sub>                    d) None of the above
163. Who among the following contributed to deciphering the genetic code?  
 a) J.D. Watson and Francis Crick  
 b) Marshall Nirenberg, Severo Ochoa and Hargobind Khorana  
 c) Linus Pauling                  d) Barbara McClintock
164. What is femur?  
 a) Thigh bone                      b) Ear bone  
 c) Another name for a wild cat  
 d) None of the above

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154. C	155. A	156. B	157. A	158. A	159. A
160. A	161. C	162. B	163. B	164. A	

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196. What is the use of liquid Renin?  
 a) Making milk into curd  
 b) To maintain blood in a liquid form  
 c) Not to produce too much of biles  
 d) None of the above
197. The function of haemoglobin is  
 a) destruction of bacteria      b) prevention of anaemia  
 c) utilisation of energy      d) transport of oxygen
198. Lungs are situated in the  
 a) pericardial cavity      b) abdominal cavity  
 c) thoracic cavity      d) buccal cavity
199. What is the volume of blood that can be donated by a healthy man at a time?  
 a) 300 ml      b) 200 ml  
 c) 100 ml      d) None of the above
200. Biologists have so far known, found and identified a large number of species in the plant and animal kingdoms. In terms of numbers, the largest found and identified so far is from among the  
 a) fungi      b) plants  
 c) insects      d) bacteria
201. How many wisdom teeth does a human being have?  
 a) 2      b) 4  
 c) 10      d) 1
202. In the human body a cell that most nearly resembles the cell of an animal's body is  
 a) White blood cell      b) Nerve cell  
 c) Skin cell      d) None of the above
203. Genetic variation in the progeny is brought about usually by  
 a) crossing over      b) vegetative propagation  
 c) mitotic division      d) asexual multiplication
204. The enzyme that is used to join DNA fragments are  
 a) Ligase      b) DNA Ligase  
 c) Cytokinase      d) Enterokinase
205. Which vitamin stops bleeding in the teeth?  
 a) Vitamin D      b) Vitamin K  
 c) Vitamin A      d) Vitamin C

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196. A    197. D    198. C    199. A    200. C    201. B  
 202. A    203. A    204. B    205. D

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206. In the human body most of the digestion occurs in the  
 a) Small intestine                      b) Large intestine  
 c) Stomach                                d) Mouth
207. Which of the following is used as a host in genetic engineering?  
 a) Chlamydomonas                      b) Escherichia coli  
 c) Nitrasomonas                        d) Virus
208. Most of the oxygen carried by the blood is in the  
 a) White cells                              b) Red cells  
 c) Fibrin                                    d) None of the above
209. Name the causal organism of tuberculosis.  
 a) *Mycobacterium*                      b) *Salmonella typhi*  
 c) *Plasmodium*                         d) None of the above
210. The part of the brain most concerned with control of the heart is  
 a) cerebrum                                b) medulla  
 c) cortex                                    d) none of the above
211. Which protects the brain?  
 a) Cranial box                              b) Neurocranium  
 c) Spinal cord                              d) None of the above
212. The salivary gland secretes saliva which contains the enzyme  
 a) Ptyalin                                    b) Renin  
 c) Pepsin                                    d) Lipase
213. Who coined the term 'vitamin'?  
 a) Benting                                  b) Bung  
 c) Suvan                                    d) Celiden
214. Which vitamin dissolves in water?  
 a) Vitamin D                                b) Vitamin B  
 c) Vitamin K                                d) Vitamin C
215. What is the scientific name of human species?  
 a) *Homo sapiens*                         b) *Homo habilis*  
 c) *Homo rudelfensis*                    d) None of the above
216. The salivary enzymes become ineffective in our stomach due to  
 a) change in place of enzyme action  
 b) presence of gastric enzymes  
 c) alkaline pH of the medium  
 d) acidic pH of the medium

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206. A	207. B	208. B	209. A	210. B	211. A
212. A	213. A	214. B	215. A	216. D	

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217. Which of the following is a cell wall degrading enzyme?  
 a) Pectinase                      b) Lipase  
 c) Ligase                          d) Peptidase
218. Red blood corpuscles are formed in the  
 a) liver                              b) bone marrow  
 c) kidneys                          d) blood sugar
219. Which is the smallest living organism?  
 a) Algae                            b) Fungus  
 c) Germ                            d) Virus
220. The size of the virus is so small that it can be seen only with the help of  
 a) Microscope                      b) Electronic Microscope  
 c) Naked eye                        d) None of the above
221. Total volume of blood in a normal human being is  
 a) 5-6 litres                        b) 10-12 litres  
 c) 3-4 litres                        d) 8-10 litres
222. Mutation is  
 a) A factor responsible for plant growth  
 b) A change which affects the offspring of  $F_2$  generation only  
 c) A change that is inherited  
 d) A change which affects the parents only but never inherited
223. The function of endoplasmic reticulum is  
 a) Acrosome formation            b) Lysosome formation  
 c) Synthesis of steroid hormones  
 d) Secretion of proteins
224. Mitosis actually means  
 a) Division of cytoplasm only  
 b) Division of nucleus only  
 c) Reduction in number of chromosomes  
 d) Both nuclear and cytoplasmic division
225. The first person to see a cell under microscope was  
 a) Robert Hooke                    b) A.V. Leuwenhock  
 c) T. Schwan                        d) M. Scheleiden
226. Pathway of energy in an ecosystem is  
 a) Cyclic                            b) Unidirectional  
 c) Web-like  
 d) Sometimes cyclic and sometimes unidirectional

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217. A	218. B	219. C	220. A	221. A	222. C
223. C	224. D	225. A	226. A		

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227. The concentration of which one of the following is the highest in the intra-cellular fluids?
- Iron
  - Sodium
  - Calcium
  - Potassium
228. Fertilisation is the process of
- Fusion of male nucleus with polar nuclei
  - Formation of seed from ovule
  - Fusion of one male gamete with the egg
  - Transfer of pollen from anther to stigma
229. Ligaments and tendons in the body are composed of
- Connective tissue
  - Epithelial tissue
  - Muscular tissue
  - Skeletal tissue
230. Which of the following parts of the skeleton protects the spinal cord?
- Auditory capsule
  - Cranium
  - Olfactory capsule
  - Vertebral column
231. Golgibody is found in
- RBC in man
  - All the cells
  - All the cells except RBC and bacteria
  - Bacterial cells only
232. Which of the following is the smallest functional genetic unit?
- Chromosome
  - Cistron
  - DNA
  - Gene
233. Which of the following is a fusogenic agent?
- Methyl alcohol
  - Citric acid
  - Polyethylene glycol
  - Propyl alcohol
234. Who, among the following, is associated with the theory of inheritance of acquired characteristics?
- Charles Darwin
  - Lamarck
  - Spencer
  - De Vries
235. Who propounded the theory of natural selection?
- Mendel
  - Lamarck
  - Darwin
  - De Vries
236. All unicellular animals and plants are put under the group
- Protozoa
  - Monera
  - Protista
  - Prokaryota

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227. B	228. C	229. B	230. D	231. C	232. B
233. C	234. B	235. C	236. C		

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258. Bile secreted by the liver gets stored in the  
 a) Gall bladder                      b) Duodenum canal  
 c) Liver itself                        d) Spleen
259. If a boy's father has haemophilia and his mother has one gene for it, what is the chance that the boy will inherit the disease  
 a) 100%                                b) 75%  
 c) 50%                                 d) 25%
260. In wrong blood transfusion  
 a) RBCs of recipient agglutinate  
 b) RBCs of donor agglutinate  
 c) WBCs of donor agglutinate  
 d) WBCs of recipient agglutinate
261. Genetic mutation occurs in  
 a) DNA                                 b) RNA  
 c) Chromosomes                    d) Ribosomes
262. Which of the following causes by fermentation, decomposition of organic substances, resulting in simpler compounds?  
 a) Algae                                b) Fungi  
 c) Micro-organisms                d) None of the above
263. Lipase, an enzyme, breaks up  
 a) Fats into fatty acids and glycerine  
 b) Insulin into fructose  
 c) Maltose into glucose  
 d) Peptones into amino acids
264. The basic building blocks of proteins are  
 a) Amino acids                        b) DNA  
 c) Nitrogenous bases                d) RNA
265. Which of the following carry genetic information?  
 a) Carbohydrates                    b) Fatty acids  
 c) Nucleic acids                      d) Proteins
266. Antiserum is a serum containing  
 a) Antibodies                         b) Antigens  
 c) Bacteria                            d) Leucocytes

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258. A	259. C	260. A	261. A	262. C	263. A
264. A	265. C	266. A			

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- 272. Balanced diet is the one containing**
- sufficient proteins, carbohydrates and fats
  - food items containing all the nutrients which are needed in the right amounts
  - food items proportionately weighed in right amount
  - food items containing minerals, vitamins and hormones
- 273. Which one of the following is known as protein factories of the cell?**
- Lysosomes
  - Chromosomes
  - Ribosomes
  - Golgi bodies
- 274. Which one of the following statements is not a characteristic of echinoderms?**
- All are marine
  - Water vascular system is present
  - The body is segmented
  - Adults are radially symmetrical
- 275. Which one of the following statements correctly defines the term vein?**
- Blood vessel that carries deoxygenated blood
  - Blood vessel that carries oxygenated blood
  - Blood vessel that carries blood towards heart
  - Blood vessel that carries blood away from the heart
- 276. Given below are two statements one labelled as Assertion (A) and the other labelled as Reason (R):**
- Assertion (A) :** Deficiency of iodine in diet may produce myxoedema, a symptom of hypothyroidism.
- Reason: (R) :** Deficiency of iodine reduces the secretion of thyro-tropic hormone.
- In the context of the above two statements which one of the following is correct?
- Both (A) and (R) are true, and (R) is the correct explanation of (A)
  - Both (A) and (R) are true, but (R) is not a correct explanation of (A)
  - (A) is true, but (R) is false
  - (A) is false, but (R) is true

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272. B    273. C    274. C    275. C    276. A

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**277. Match List I with List II and select the correct answer by using the codes given below the lists:**

List I		List II	
A) Auxins		1) Food mobilisation in germinating seeds	
B) Cytokinins		2) Parthenocarpy	
C) Gibberellins		3) Pre-harvest fruit drop	
D) Ethylene		4) Growth hormone	

**Codes:**

	A	B	C	D
a)	2	3	1	4
b)	3	2	1	4
c)	3	1	2	4
d)	2	1	3	4

**278. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** The biological processes of growth, development and differentiation enable the plants and animals to enter the functional state of life.

**Reason: (R) :** Various biological and environmental factors regularise the state of life.

**In the context of the above two statements which one of the following is correct?**

- a) Both A and R are true and R is the correct explanation of A  
 b) Both A and R are true but R is not a correct explanation of A  
 c) A is true but R is false      d) A is false but R is true

**279. If the base sequence in one strand of DNA is TAG, ATC, GTT what will be the base sequence in its (i) complementary strand and (ii) transcribed mRNA strand?**

- a) (i) ATC TAG CAA  
 (ii) AUC UAG GAA  
 b) (i) TAG ATC GTT  
 (ii) AUC UAG GAA  
 c) (i) ATC TAG CAA  
 (ii) TAG ATC GTT  
 d) (i) ATC TAG CAA  
 (ii) ATC TAG GAA

277. C    278. B    279. A

280. Match List I with List II and select the correct answer by using the codes given below the lists:

**List I**  
(Organelle)

- A) Nucleus
- B) Idiosome
- C) Chromosome
- D) Cell

**List II**  
(Discoverer)

- 1) Robert Hooke
- 2) Robert Brown
- 3) Golgi
- 4) Waldeyer

**Codes:**

	A	B	C	D
A)	2	3	4	1
B)	3	2	1	4
C)	4	3	2	1
D)	1	2	3	4

281. Sea sickness is due to the effect of the motion of ship on
- a) internal ear
  - b) heart
  - c) stomach
  - d) eyes
282. Cancer is caused due to
- a) bacterial infection
  - b) non-malignant tumour
  - c) uncontrolled cell division
  - d) nutritional deficiency
283. The substance lost from the human body during dehydration is
- a) Iodine
  - b) Sodium chloride
  - c) Sugar
  - d) Potassium chloride
284. Carbohydrates are stored in the body as
- a) glucose
  - b) starch
  - c) glycogen
  - d) sucrose
285. Which one of the following diseases is genetically linked?
- a) Epilepsy
  - b) AIDS
  - c) Colour-blindness
  - d) Leucoderma
286. Why do cells produce less energy for work when red blood cells count of blood goes down?
- a) Low blood pressure
  - b) Slow rate of blood circulation
  - c) Poor nutrient supply
  - d) Poor oxygen supply
287. A teaspoonful of which of the following has highest caloric value?
- a) Groundnut oil
  - b) Pure ghee
  - c) Corn oil
  - d) Granular sugar

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280. A    281. C    282. C    283. B    284. B  
285. C    286. D    287. A

---

288. When should the blood sample of a patient be taken for best test of malarial parasites?  
a) An hour before the usual rise of temperature  
b) When the body temperature rises with vigour  
c) When the temperature comes down to normal  
d) A few hours after the temperature returns to normal
289. Which part of the human body is first adversely affected by nuclear radiation?  
a) Eyes  
b) Lungs  
c) Skin  
d) Bone marrow
290. Muscles of which of the following parts of the body are the strongest?  
a) Thigh  
b) Wrist  
c) Finger  
d) Jaw
291. What is the general shape of the bacteria?  
a) Spheres  
b) Spirals  
c) Rods  
d) Cubes
292. Which one of the following in the bloodstream is reduced most by excessive vomiting and diarrhoea?  
a) Calcium  
b) Sodium  
c) Potassium  
d) Iron
293. The largest cell in the human body is  
a) Nerve cell  
b) Muscle cell  
c) Liver cell  
d) Kidney cell
294. All of the following foods lack vitamin except  
a) Cheese  
b) Milk  
c) Meat  
d) Rice
295. The main function of white blood cells in the body is to  
a) carry oxygen  
b) help in clot formation  
c) produce more red cells  
d) protect body against diseases
296. Serum differs from blood plasma in that the former lacks  
a) WBC  
b) RBC  
c) Fibrinogen  
d) Glucose
297. A person has taken a large amount of meat which contains high protein. His urine will contain more of  
a) Glycogen  
b) Glucose  
c) Creatinine  
d) Urea

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288. B	289. A	290. D	291. A	292. B	293. A
294. D	295. D	296. C	297. D		

---

- 298. Decrease in white blood corpuscles results in**  
 a) decrease in antigens      b) decrease in antibodies  
 c) increase in antibodies      d) No chance
- 299. Pituitary is called a master gland because**  
 a) it is situated in the brain      b) it controls other glands  
 c) it is the largest in size      d) it secretes many hormones
- 300. An enzyme is a substance that can convert complex organic substances into simple ones. It is**  
 a) a fat      b) a protein  
 c) a mineral      d) a carbohydrate like sugar
- 301. A woman's reproductive capacity lasts from the age of puberty to about**  
 a) 45-50 years      b) 55-60 years  
 c) 40-45 years      d) 60-65 years
- 302. The blood is oxygenated and purified in which of the following parts of human body?**  
 a) Kidney      b) Lungs  
 c) Liver      d) Heart
- 303. Meninges are**  
 a) membranes covering the heart  
 b) connective tissue membranes covering the brain  
 c) secretions of the pancreas  
 d) myelin sheath on the nerve fibre
- 304. Which one of the following symptoms of nutritional deficiency disorders is specific to vitamin C deficiency?**  
 a) Cracks on lips      b) Spongy bleeding gums  
 c) Pale conjunctivae      d) Rashes on skin
- 305. Consider the following functions:**  
 I. Regulating the loss of excess water from the body  
 II. Removal of waste products from blood.  
 III. Maintaining the balance of the body  
 IV. Maintaining a constant composition of blood  
**The main function(s) of the kidney would include**  
 a) I alone      b) I and II  
 c) II, III and IV      d) I, II, III and IV

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298. B    299. B    300. B    301. a    302. b    303. B  
 304. B    305. B

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**306. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** On entering a dark room one cannot see much but within a few seconds one's sight is adjusted to the dim light.

**Reason (R) :** Adaptation means any structural, physiological and biochemical change in the living organisms which enables it to take advantage of its environment.

**In the context of the above two statements which one of the following is correct?**

- a) Both (A) and (R) are true and (R) is the correct explanation of (A)
  - b) Both (A) and (R) are true, but (R) is not a correct explanation of (A)
  - c) (A) is true, but (R) is false
  - d) (A) is false, but R is true
- 307. Which one of the following theories was proposed by A.I. Oparin and J.B.S. Haldane?**
- a) Biochemical theory of origin of life
  - b) Life begets life
  - c) Chromosome theory of inheritance
  - d) Theory of natural selection
- 308. Any change in the sequence of nucleotides in DNA is known as**
- a) Induction
  - b) Mutation
  - c) Cloning
  - d) Replacement
- 309. The selection of a dairy bull should be based on**
- a) progeny testing
  - b) family performance
  - c) height
  - d) weight
- 310. Blood is classified biochemically as a**
- a) cell
  - b) liquid
  - c) tissue
  - d) cartilage
- 311. In brain, the site for intelligence, memory and emotion is present in**
- a) cerebrum
  - b) cerebellum
  - c) medulla
  - d) hypothalamus

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306. B    307. A    308. B    309. C    310. C    311. A

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312. The double helix structure of DNA molecule was proposed by  
 a) James Waston and Francis Crick  
 b) Max Perutz and Maurice Wilkins  
 c) Rosalind Franklin and Maurice Wilkins  
 d) Hargobind Khorana and Arthur Kornberg
313. Which one of the following provides a direct evidence in favour of organic evolution?  
 a) Homologous structures    b) Fossils  
 c) Embryonic stages        d) Analogous structures
314. The smallest blood vessel is called  
 a) Vena cava                      b) Artery  
 c) Capillary                      d) Aorta
315. Man's nearest relative in animal world is  
 a) The common rhesus monkey  
 b) Gorilla  
 c) Chimpanzee                      d) Gibbon
316. A post-mortem study usually involves an analysis of liver. This is so because the liver shows a fairly correct picture of the dead person's  
 a) age                                  b) glycogen content  
 c) food taken by him              d) history of illness
317. Warm-blooded animals maintain a high body temperature for faster  
 a) digestion                          b) breathing  
 c) breeding                          d) movement
318. Which of the following group of compounds constitute carbohydrates?  
 a) Fats and sugar  
 b) Fats, sugar and proteins  
 c) Starch, sugar and proteins  
 d) Starch and sugar
319. The hormone which regulates the basal metabolism in our body is secreted from  
 a) Pituitary                          b) Thyroid  
 c) Adrenal cortex                      d) Pancreas

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312. A	313. B	314. C	315. C	316. B	317. C
318. D	319. B				

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- 320. The natural wax and lac are obtained as**  
 a) Petroleum products      b) Resins of forest plants  
 c) Byproducts of sugar industry  
 d) Insect secretions
- 321. The pituitary gland by virtue of its tropic hormones controls the secretory activity of other endocrine glands. Which one of the following endocrine glands can function independent of the pituitary gland?**  
 a) Thyroid      b) Gonads  
 c) Adrenals      d) Parathyroid
- 322. Oxygen transportation in a human body takes place through**  
 I) Blood      II) Lungs      III) Tissue  
 a) I, II, III      b) III, I, II  
 c) II, I, III      d) I, III, II
- 323. Corpus luteum is a mass of cells found in**  
 a) brain      b) ovary  
 c) pancreas      d) spleen
- 324. Match List I with List II and select the correct answer:**
- | List I (Organalle) |  | List II (Function)                     |  |
|--------------------|--|--|--|
| A) Cell wall       |  | 1) Controls the movement of substances |  |
| B) Plasma membrane |  | 2) Provides shape                      |  |
| C) Ribosome        |  | 3) Protein synthesis                   |  |
| D) Golgi body      |  | 4) Secretion                           |  |
- |      | A | B | C | D |
|------|---|---|---|---|
| a) 2 | 1 | 3 | 4 |   |
| b) 1 | 2 | 3 | 4 |   |
| c) 2 | 1 | 4 | 3 |   |
| d) 1 | 2 | 4 | 3 |   |
- 325. Consider the following statements about the liver:**  
 I. It secretes bile which helps in the digestion of fat.  
 II. It assists in the transport of oxygen from one part of the body to the other.  
 III. It acts as a storage organ of high energy molecules such as fat.  
 IV. It acts as a storage organ for glycogen.  
 a) I and III are correct      b) I and IV are correct  
 c) II and IV are correct      d) I, II and III are correct

320. D    321. D    322. C    323. B    324. A    325. B

**326. Consider the following statements:**

**Assertion (A) :** Ecosystem is a functional system which, in a balanced condition, is self-sufficient and self-regulated.

**Reason: (R) :** Ecosystem has a natural tendency to counteract in order to maintain the functional balance.

**Of these statements:**

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

**327. The main difference between vaccine and toxoid is that vaccines are**

- a) live pathogens administered in the body in small amounts to produce immunity whereas toxoids are killed organisms
- b) those pathogenic organisms that are administered in the body orally whereas toxoids are administered by injection
- c) the toxins are produced by viruses while toxoids are produced by bacteria
- d) killed organisms or attenuated pathogenic agents whereas toxoids are detoxified toxins of pathogen

**328. An example of biotechnology is the**

- a) application of modern technology to understand the living systems
- b) construction of plants to produce fodder for animals
- c) manufacturing equipment for the study of micro-organisms
- d) using micro-organisms to synthesise insulin

**329. We have four types of teeth. What is the correct order in which they appear in man?**

- a) Premolar, Molar, Canine, Incisor
- b) Incisor, Premolar, Canine, Molar
- c) Premolar, Canine, Molar, Incisor
- d) Incisor, Canine, Premolar, Molar

**330. Nutritive value of food stuff is increased by**

- a) canning
- b) enrichment
- c) fortification
- d) pasteurization

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326. A    327. C    328. A    329. D    330. B

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334. The nutrients that are essential for synthesis of haemoglobin would include
- Calcium, phosphorus and iron
  - Vitamin A and protein
  - Vitamin B<sub>12</sub>, iron and folic acid
  - B vitamins and iron
335. From the point of evolution, the most significant feature of meiosis is
- Gamete production
  - Genetic recombination
  - Segregation
  - Reduction of chromosome number
336. Cycling of elements between living and non-living components of the biosphere is known as
- Biological cycles
  - Biogeochemical cycles
  - Biogeocoenosis
  - Geobiocoenosis
337. The sequencing of the entire genome (the totality of all genes) of an organism was completed in 1996. The organism was:
- albino mouse
  - yeast
  - human being
  - plasmodium vivax*

338. Match List I with List II and select the correct answer using the codes given below the lists:

List I (Disease)	List II (Organism)
A) Malaria	1) Fungi
B) Poliomyelitis	2) Bacteria
C) Tuberculosis	3) Virus
D) Ringworm	4) Protozoan

Codes:

	A	B	C	D
a)	4	3	2	1
b)	4	3	1	2
c)	3	4	1	2
d)	3	4	2	1

339. Haemophilia is a genetic disorder which leads to
- decrease in haemoglobin level
  - rheumatic heart disease
  - decrease in WBC
  - non-clotting in blood

334. C    335. B    336. B    337. C    338. A    339. D

346. Man cannot digest cellulose whereas cows can do so, because
- their gut contains certain bacteria capable of digesting cellulose
  - they have a many chambered stomach
  - they have efficient grinding molars
  - they produce an enzyme cellulase which can digest cellulose
347. Match List I with List II and select the correct answer using the codes given below the lists:

List I	List II
A) Islets of Langerhans	1) Calcitonin
B) Pituitary gland	2) Epinephrine
C) Thyroid gland	3) Growth hormone
D) Adrenal gland	4) Insulin

Codes:

	A	B	C	D
a)	4	3	2	1
b)	4	3	1	2
c)	3	4	1	2
d)	3	2	4	1

348. The blood pressure values of four persons are given below:

- |                 |                   |
|-----------------|-------------------|
| 1) Mrs. X 90/60 | 3) Mr. X 60/120   |
| 2) Mr. Y 20/80  | 4) Mrs. Y 140/100 |

Who among the following has normal blood pressure?

- |           |          |
|-----------|----------|
| a) Mrs. X | b) Mr. X |
| c) Mrs. Y | d) Mr. Y |
349. Three communicable diseases prevalent in developing countries caused by unsafe drinking water and bad sanitation are
- acute diarrhoea, cancer and gout
  - malaria, acute diarrhoea and schistosomiasis
  - onchocerciasis, leukaemia and arthritis
  - rheumatism, malaria and AIDS
350. Scratching eases itching because
- it removes the outer dust in the skin
  - it kills the germs
  - it stimulates certain nerves which direct the brain to increase the production of antihistaminic chemicals
  - it suppresses the production of enzymes which cause itching

346. A    347. B    348. B    349. D    350. B

351. The theory of 'Jumping genes' was propounded by  
a) Gregor Johann Mendel    b) Thomas Hunt Morgan  
c) Barbara Mc Clintock    d) Watson and Crick
352. The pitch of the voice of women is in general  
a) higher than that of men  
b) marginally lower than that of men  
c) much lower than that of men  
d) the same as that of men
353. The following layers are found in the structure of the eye:  
1. Conjunctiva                      2. Choroid  
3. Retina                              4. Sclerotic  
The correct sequence of these layers from the outer to inner is  
a) 4, 1, 3, 2                      b) 4, 1, 2, 3  
c) 1, 4, 2, 3                      d) 1, 4, 3, 2
354. In the balanced dietaries for a day of an adult working man, weights of carbohydrate food and total protein food (both superior and inferior) should be in order of  
a) 600gm and 420gm respectively  
b) 600gm and 600gm respectively  
c) 420gm and 600gm respectively  
d) 420gm and 420gm respectively
355. Given below are two statements, one labelled as Assertion(A) and the other as Reason (R):  
Assertion (A) : A lock of Einstein's hair, if scientists could locate it and extract its DNA, could help in producing another Einstein, by cloning.  
Reason (R) : The DNA extracted from the cell of an embryo at an early stage of development, can be transferred to individual eggs which in turn can be implanted into the uterus of a surrogate mother to give birth to an identical offspring.  
In the context of the above two statements, which one of the following is correct?  
a) Both A and R are true, and R is the correct explanation of A  
b) Both A and R are true, but R is not a correct explanation of A  
c) A is true but, R is false    d) A is false but R is true

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351. C    352. A    353. C    354. A    355. D

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371. "It begins as a single cell and grows into a merciless disease that claims millions of lives year after year. But scientists are steadily unlocking its mysteries, and the fight against it may now have reached a dramatic turning point. New discoveries promise better therapies and hope in the war against". This disease referred to in the above quotation is
- a) Cancer
  - b) AIDS
  - c) Tuberculosis
  - d) Alzheimer's disease
372. Which one of the following sets is correctly matched?
- a) Diphtheria, Pneumonia and Leprosy - Hereditary
  - b) AIDS, Syphilis and Gonorrhoea - Bacterial
  - c) Colour blindness, Hemophilia and Sickle cell anaemia - Sex-linked
  - d) Polio, Japanese B encephalitis and Plague - Viral
373. Which one of the following hormones contains iodine?
- a) Thyroxine
  - b) Testosterone
  - c) Insulin
  - d) Adrenaline
374. Who predicted that only one factor would enter into the gamete, even before meiosis was discovered?
- a) Darwin
  - b) T.H. Morgan
  - c) Mendel
  - d) de Vries
375. Fat present below the skin surface in our body acts as a barrier against
- a) loss of heat from the body
  - b) loss of essential body fluids
  - c) loss of salts from the body
  - d) entry of harmful micro-organisms from the environment
376. Which of the following would lead to malnutrition?
1. Over nutrition
  2. Under nutrition
  3. Imbalanced nutrition
- Select the correct answer from the codes given below:
- a) 2 alone
  - b) 2 and 3
  - c) 1 and 3
  - d) 1, 2 and 3

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371. A 372. C 373. A 374. C 375. A 376. B

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384. Which of the following is an energy producer?  
 a) carbohydrates                      b) protein  
 c) mineral                                d) vitamins
385. The unit used to measure the energy released during oxidation of food is  
 a) Kelvin                                    b) Joule  
 c) Joules/kg                                d) Calorie
386. Which one of the following food gives the maximum energy yield per gram?  
 a) carbohydrates                      b) glucose  
 c) fat                                         d) protein
387. The element necessary for the formation of haemoglobin and chromatins is  
 a) Sodium                                  b) Iron  
 c) Iodine                                    d) Manganese
388. The deficiency of which element causes anaemia?  
 a) Iron                                        b) Sodium  
 c) Iodine                                    d) Manganese
389. The mineral essential for formation of thyroxin is  
 a) Magnesium                            b) Chlorine  
 c) Iodine                                    d) Potassium
390. The mineral essential for water balance is  
 a) Magnesium                            b) Chlorine  
 c) Sodium                                  d) Potassium
391. The chemical name for vitamin A is  
 a) Retinol or Antixerophthalmic  
 b) Calciferol  
 c) Thiamine  
 d) Tocopherol
392. Deficiency of vitamin A leads to  
 a) Beri-beri                                b) Pellagra  
 c) Rickets                                    d) Xerophthalmia
393. The vitamin which is formed by the action of ultra-violet rays of sunlight on a substance of the skin is  
 a) Vitamin A                                b) Vitamin D  
 c) Vitamin C                                d) Vitamin E

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384. A	385. D	386. C	387. B	388. A	389. C
390. B	391. A	392. D	393. B		

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394. B    395. D    396. D    397. D    398. A    399. B  
400. A    401. C    402. B    403. D    404. A

438. The cells which secrete insulin are  
a) Oxyntic cells                      b) Beta cells  
c) Alpha cells                        d) Medullary cells
439. The hormone which controls blood sugar level is  
a) insulin                              b) adrenalin  
c) nor-epinephrine                  d) glucagon
440. The hormone which also acts as an anti-inflammatory agent is  
a) cortisone                           b) nor - epinephrine  
c) epinephrine                        d) aldosterone
441. The hormone which causes rise in blood pressure is  
a) testosterone                       b) adrenalin  
c) nor-adrenalin                      d) aldosterone
442. The hormone which causes an increase in heart beat is  
a) aldosterone                        b) nor-adrenalin  
c) adrenalin                           d) cortisone
443. The uterus is situated in  
a) sacral region                       b) pectoral cavity  
c) lumbar region                      d) pelvis cavity
444. Menstrual cycle occurs for about  
a) 25 days                              b) 14 days  
c) 28 days                              d) 30 days
445. The permanent birth control method for male is  
a) Vasectomy                         b) the condom  
c) Tubectomy                         d) Cervical cap
446. The permanent birth control method for female is  
a) Copper-T                           b) Vasectomy  
c) Tubectomy                         d) Diaphragm
447. The branch of biology that deals with heredity is  
a) Cell biology                        b) Genetics  
c) Histology                           d) Paleontology
448. The failure of clotting of blood is known as  
a) Anaemia                             b) Erythroblastosis  
c) Polycythemia                       d) Haemophilla
449. The normal duration for clotting of blood is  
a) 2-4 minutes                        b) 2-5 minutes  
c) 2-8 minutes                        d) 2-6 minutes

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438. B	439. A	440. A	441. C	442. C	443. D
444. C	445. A	446. C	447. B	448. D	449. C

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- 450.** The disease colour blindness was discovered by  
a) Wilson                                  b) Anderson  
c) Robertson                              d) Bunsen
- 451.** Haemophilia is also known as  
a) breeder's disease                    b) red disease  
c) bleeder's disease                    d) None of the above
- 452.** 'O' blood group persons can receive blood from only  
a) AB group                                b) A group  
c) 'O' group                                d) B group
- 453.** Persons with which blood group are called as universal donors?  
a) O group                                  b) B group  
c) AB group                                d) A group
- 454.** Individuals with which blood group are called as universal recipients?  
a) B group                                  b) A group  
c) AB group                                d) O group
- 455.** Rh - factor was discovered by  
a) A.S. Wiener and Landsteiner  
b) Robertson  
c) Calvin  
d) Lamarck and Weisman
- 456.** A method to improve mankind by improving environmental condition is  
a) Euthenics                                b) Positive eugenics  
c) Eugenics                                 d) None of these
- 457.** Incomplete dominance was observed in  
a) *Pisum sativum*                        b) *Arachis hypogea*  
c) *Bryophyllum*                         d) *Mirabilis jalapa*
- 458.** The blood vessels which leave from the heart are called \_\_\_\_\_ in human body.  
a) veins                                      b) neurons  
c) aorta                                      d) arteries
- 459.** Of the following which one is the biological agent of communicable disease?  
a) urea                                        b) fat  
c) mycoplasma                              d) heat

450. A 451. C 452. C 453. A 454. C 455. A  
456. A 457. D 458. D 459. C

**480. Which pair is not correctly matched?**

- a) Insulin - Diabetes                      b) Virus - AIDS
- c) Jaundice - Kidney                      d) Bacteria - Typhoid

**481. The injection of 'anti-toxin' is given to prevent**

- a) typhoid                                      b) tuberculosis
- c) tetanus                                      d) measles

**482. The disease jaundice is associated with the organ**

- a) Lungs                                        b) Liver
- c) Teeth                                        d) Brain

**483. The cross used to determine the purity of parents is**

- a) Monohybrid cross
- b) Back cross
- c) Test cross
- d) Dihybrid cross

**484. What is the correct sequence of the following in a heart attack?**

- 1) Narrowing of the inner orifice of the vessel
- 2) 'Plaque' from fibrous tissue and high cholesterol
- 3) Inadequate supply of blood and oxygen
- 4) Clots of blood carried into the coronary arteries

**Choose the answer from the codes given below:**

- a) 1, 2, 3, 4                                      b) 2, 4, 1, 3
- c) 2, 3, 1, 4                                      d) 4, 2, 1, 3

**485. The head is jointed to the vertebral column by which type of joint?**

- a) Saddle joint                                      b) Hinge joint
- c) Gliding joint                                      d) Pivot joint

**486. The normal temperature of human body is**

- a) 98.4°C                                        b) 36.9°C
- c) -37°C                                        d) 98.5°C

**487. Rate of pulsation of an adult per minute is**

- a) 70 to 80                                        b) 50 to 60
- c) 80 to 90                                        d) 90 to 100

**488. The disease beri-beri is caused by the deficiency of which vitamin in the body?**

- a) Vitamin C                                      b) Vitamin A
- c) Vitamin B                                      d) Vitamin K

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480. C	481. C	482. B	483. C	484. B	485. C
486. A	487. A	488. A			

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- 489.** The chemistry of vision is associated with vitamin  
a) B                                      b) A  
c) C                                      d) D
- 490.** Deficiency of haemoglobin in the blood causes  
a) Anaemia                                b) Leukemia  
c) Leucoderma                          d) High Blood pressure
- 491.** Which of the following are characteristics shown by a breast-fed baby when compared to a bottle-fed baby?  
1) It is less obese  
2) It shows greater capacity to resist diseases  
3) It gets more vitamins and proteins  
4) Its growth in height is abnormal
- Select the correct answer from the codes given below:  
a) 1, 2, and 3                            b) 1, 2 and 4  
c) 1, 3 and 4                            d) 2, 3 and 4
- 492.** Which one of the following secretes hormones in the human body?  
a) Plasma cells                          b) Endocrine glands  
c) Salivary glands                      d) Prostate glands
- 493.** Which of the following were seen after the electron microscope was made available to the cell biologists?  
1) DNA double helix                  2) Chromosomes  
3) Ribosomes                            4) Lysosomes
- Choose the answer from the codes given below:  
a) 1 and 2                                b) 3 and 4  
c) 2 and 4                                d) 1 and 3
- 494.** Which of the following statements are true of mongolism or Down's syndrome?  
1) Mongoloid child has a total of 47 genes  
2) Children born to older women are more likely to be mongoloids  
3) It is sex-linked  
4) Mongoloids have eyes slit-like, flat nose and protruding tongue
- Choose the answer from the codes given below:  
a) 1 and 2                                b) 2 and 3  
c) 3 and 4                                d) 2 and 4
- 495.** Which one of the following is not an asexual reproduction?  
a) Binary fission                        b) Sporulation  
c) Regeneration                        d) Conjugation

489. B    490. A    491. A    492. B    493. D    494. A  
495. D

496. A person with 'AB' blood group is sometimes called a universal recipient because of the-
- lack of antigen in his blood
  - lack of antibodies in his blood
  - lack of both antigens and antibodies in his blood
  - presence of antibodies in his blood
497. Which one of the following is a membrane that protects the developing embryo from desiccation?
- Amnion
  - Allantois
  - Chorion
  - Yolk sac
498. The abiotic parts of a self-sufficient pond-water ecosystem include
- water, small fishes, phosphates and nitrates
  - water, dissolved  $O_2$ ,  $CO_2$  and insects
  - water, phytoplankton, zooplankton and bacteria
  - water, dissolved  $O_2$ ,  $CO_2$  and inorganic salts
499. Consider the following methods:
- Embryo transfer technique
  - Transgenic experiments
  - Use of appropriate fertilisers
- Genetic improvement of livestock can be achieved by
- I and III
  - I and II
  - II alone
  - II and III
500. Match List I with List II and select the correct answer using the codes given below the lists:

List I		List II	
A)	Rodents	1)	Scabies
B)	Itch-mite	2)	Guineaworm disease
C)	Eggs	3)	Tapeworm infestation
D)	Step well	4)	Salmonella poisoning

Codes:

	A	B	C	D
a)	4	1	2	3
b)	1	4	2	3
c)	1	3	4	2
d)	3	1	4	2



496. B    497. A    498. D    499. B    500. A

## • BOTANY •

- Which of the following is not a natural fibre?
  - Nylon
  - Cellulose
  - Cotton
  - Starch
- Which one of the following occurs during photosynthesis of green plants?
  - Light energy is converted into biochemical energy
  - Light energy is destroyed
  - Light energy is stored in food molecules
  - Light energy is synthesised
- Potato, ginger and turmeric are not roots but portions of the stem. This is due to the fact that
  - they have storage food materials
  - they possess nodes, internodes and scaly and foliage leaves
  - they have suberin, cutin and lignin
  - they have xylem and phloem
- Match List I with List II and select the correct answer by using the codes given below the lists:

### List I

- A) Primary root  
B) Tap-root  
C) Fibrous root\*  
D) Adventitious root

### List II

- 1) It is formed due to repeated branching of the radicle.
- 2) It is primary root and its branches.
- 3) Roots arise at any place other than the root system.
- 4) It is direct prolongation of the radicle as noticed in nearly all dicotyledonous plants.

**Codes:**

	A	B	C	D
a)	4	2	1	3
b)	1	2	3	4
c)	3	4	2	1
d)	2	1	4	3

**Ans.** 1. A 2. A 3. B 4. A

5. The best soil for healthy and vigorous growth of most of the plants is
  - a) clay
  - b) loam
  - c) sand
  - d) silt
6. Sometimes a branch of the plant is bent towards the ground and covered with moist soil. When new roots emerge, the plantlets are separated from the parent plant. It is known as
  - a) Grafting
  - b) Cutting
  - c) Layering
  - d) Budding
7. Green plants evolve oxygen during the day rather than carbon-dioxide. This means that
  - a) green plants respire only at night
  - b) green plants do not respire
  - c) green plants respire during day but rate of respiration is very low
  - d) the rate of photosynthesis is much higher than the rate of respiration
8. Photosynthesis generally takes place in which parts of the plant?
  - a) Leaf and other chloroplast bearing parts
  - b) Stem and leaf
  - c) Roots and other chloroplast bearing parts
  - d) Bark and leaf
9. Which of the following are the characteristics of monocotyledon plants?
  - I. Leaf veins run parallel to one another.
  - II. Tracheids are predominant.
  - III. Secondary growth is absent due to lack of cambium.
  - IV. Vascular bundles are scattered randomly.

Select the correct answer by using the codes given below:

  - a) I, II and III
  - b) II, III and IV
  - c) I, II and IV
  - d) I, III and IV
10. Which one of the following is an appropriate description of mangrove plants?
  - a) Large wood-yielding trees of the tropical forests
  - b) Red sandalwood plants
  - c) Plants in marshy areas with breathing roots
  - d) Medicinal plants

---

5. B    6. D    7. D    8. A    9. D    10. C

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11. *Chlorella* is a suitable plant for an astronaut in space travel because
  - a) it provides oxygen to the astronaut and carbon dioxide released is utilised for his/her food manufacture
  - b) it supplies abundant food to the astronaut
  - c) it is a single-celled autotrophic plant
  - d) its growth is quite rapid during space flight
12. During early morning, the insects are prompted for pollination from one flower to another flower due to warm
  - a) sun
  - b) climate
  - c) flower
  - d) air
13. A leaf adapted to a warm, dry climate is
  - a) large and thin
  - b) small and thin
  - c) large and thick
  - d) small and thick
14. Which one of the following crops can enrich soil with nitrogenous compounds?
  - a) Mustard
  - b) Rice
  - c) Sugarcane
  - d) Black gram
15. Which of the following possesses chlorophyll?
  - a) Bacteria
  - b) Algae
  - c) Fungi
  - d) Mushrooms
16. Which one of the following plants does bear no fruits but produces seeds?
  - a) Groundnut
  - b) Sugarcane
  - c) Cycas
  - d) Almond
17. What is common in sunflower, coconut and groundnut?
  - a) Their fruits are edible
  - b) Their seeds are edible
  - c) These are rich sources of fibre
  - d) These provide edible oils
18. The red colour of ripe tomatoes is due to the presence of
  - a) chlorophyll
  - b) carotenoids
  - c) vitamins
  - d) hormones
19. The cross-section of the trunk of a tree showed fifty rings. What is the age of the tree?
  - a) 50 months
  - b) 5 years
  - c) 25 years
  - d) 50 years

---

11. A	12. D	13. D	14. D	15. B	16. C
17. D	18. B	19. D			

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**20. Consider the following statements:**

**Assertion (A) :** If a short-day plant which has been growing under long days condition is transferred temporarily to short days condition and then returned to a long-day environment, flowering will often be initiated

**Reason (R) :** It has been postulated that some substances are produced in the leaves which are translocated to the apical meristems, thus inducing their conversion from the vegetative to reproductive condition.

**Of these statements:**

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

**21. Consider the following statements:**

- I. In photosynthesis, carbon dioxide is consumed and oxygen is liberated.
- II. Chlorophyll is a must for photosynthesis in plants.
- III. Photosynthesis is a unique function of underground modified roots.

**Of these statements:**

- a) I, II and III are correct
- b) I and II are correct
- c) II and III are correct
- d) I and III are correct

**22. Onion is a modified form of which of the following?**

- a) Leaf
- b) Stem
- c) Root
- d) None of these

**23. How is maize pollinated?**

- a) Self-pollinated
- b) Cross-pollinated by insects
- c) Cross-pollinated by wind
- d) Cross-pollinated by rain

**24. A plant cell has the potential to develop into an entire plant. This property of the plant cells is known as**

- a) gene cloning
- b) totipotency
- c) tissue culture
- d) pluripotency

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20. D    21. B    22. B    23. A    24. B

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25. Petroleum products can be obtained by hydrocracking low molecular weight hydrocarbons present in the latex of some plants. Such plants belong to the family of

- a) *Leguminosae*                      b) *Liliaceae*  
c) *Euphorbiaceae*                      d) *Solanaceae*

26. Which one of the following plants can be used as indicator of pollution?

- a) Lichens                                  b) Liverworts  
c) Neem Tree                              d) Tulsi

27. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List-I**

- A) Fruit  
B) Seed  
C) Wood  
D) Starch

**List-II**

- 1) Ovule  
2) Leaf  
3) Stem  
4) Ovary

**Codes:**

	A	B	C	D
a)	2	1	3	4
b)	4	1	3	2
c)	2	3	1	4
d)	4	3	1	2

28. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List-I**

(Types of roots)

- A) Prop roots  
B) Climbing roots  
C) Leaf roots  
D) Stilt roots

**List-II**

(Examples)

- 1) Banyan  
2) Pan or betel  
3) Keura or ketucky  
4) Bryophyllum or Azooba

**Codes:**

	A	B	C	D
a)	1	2	3	4
b)	2	1	4	3
c)	2	1	3	4
d)	1	2	4	3

25. C    26. D    27. B    28. D

29. Which one of the following statements regarding starch and cellulose is not correct?

- a) Both of them are of plant origin
- b) Both of them are polymers
- c) Both of them give colour with iodine
- d) Both of them are made up of glucose molecules

30. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List -I**

- A) Edible banana
- B) Mangrove plant
- C) Proteins in the grains
- D) Reservoir of nutrients

**List-II**

- 1) Vivipary
- 2) Aleurone
- 3) Endosperm
- 4) Parthenocarpy

**Codes:**

	A	B	C	D
a)	1	4	2	3
b)	4	1	3	2
c)	4	1	2	3
d)	1	4	3	2

31. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List -I**

- A) Carrot
- B) Groundnut
- C) Lady's finger
- D) Potato

**List-II**

- 1) Cotyledon
- 2) Stem
- 3) Root
- 4) Fruit

**Codes:**

	A	B	C	D
a)	3	1	4	2
b)	2	3	1	4
c)	4	2	3	1
d)	1	4	2	3

32. Photosynthesis is a biochemical process for the transfer of solar energy to

- a) nitrogen cycle
- b) hydraulic cycle
- c) petrological cycle
- d) food chain cycle

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29. C    30. C    31. A    32. D

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53. Double fertilisation in angiosperms results in  
 a) one diploid cell only      b) one triploid cell only  
 c) one haploid cell and one triploid cell  
 d) one diploid cell and one triploid cell
54. What is the temperature required for a seed to grow?  
 a) 25°C to 30°C      b) 20°C to 25°C  
 c) 23°C to 50°C      d) None of the above
55. Where was tomato cultivated for the first time in the world?  
 a) South America      b) India  
 c) Arabia      d) None of the above
56. The site of photosynthesis is  
 a) vacuoles      b) chloroplast  
 c) mitochondria      d) none of the above
57. Which one of the following fruits has a seed outside?  
 a) Mango      b) Banana  
 c) Cashewnut      d) None of the above
58. Which plant is known commonly as egg-plant?  
 a) Brinjal      b) Tomato  
 c) Potato      d) Carrot
59. Where do the green plants store their food?  
 a) Stems      b) Leaves  
 c) Roots      d) None of the above
60. Which one of the following chemicals is used to find out whether starch is in a leaf?  
 a) Iodine      b) Copper  
 c) Chlorine      d) None of the above
61. In a cross between a tall (dominant) and a dwarf (recessive) plant, half of the progeny became tall and the other half dwarf, thereby indicating the genotypes of the parents as  
 a) TT, Tt      b) TT, tt  
 c) Tt, tt      d) tt, tt
62. Give an example of a single leaf.  
 a) Mango leaf      b) Banyan leaf  
 c) Arasu leaf      d) Neem leaf
63. Which is the tree that gives turpentine oil?  
 a) Oak tree      b) Pine tree  
 c) Mango tree      d) None of the above

---

53. C	54. A	55. A	56. B	57. C	58. A
59. B	60. A	61. B	62. A	63. B	

---

64. 'Micronutrients' are the elements which are needed in very small quantities but play major roles in structural organisation of the plants. Which one of the following is a correct list of 'micronutrients'?
- a) Copper, iron and phosphorus  
b) Iron, phosphorus  
c) Copper, iron and zinc  
d) Phosphorus, zinc and copper
65. Where is the Birbal Sahni Institute of Palaeobotany located in India?
- a) Mumbai  
b) Lucknow  
c) Chennai  
d) Bhopal
66. Legumes are sources of
- a) Carbohydrate  
b) Fats  
c) Proteins  
d) None of the above
67. Which plant has the largest bloom?
- a) *Canna*  
b) *Rafflesia*  
c) *Hibiscus*  
d) Golden lilies
68. Fruits are rich in
- a) Minerals  
b) Vitamins  
c) Minerals and Vitamins  
d) Fats
69. Which is the tallest tree in the world?
- a) Cycad  
b) Redwood  
c) Pine  
d) Conifer
70. Who introduced the double cross method in corn?
- a) George H. Shull  
b) Charles Darwin  
c) Donald James  
d) Asha Gray
71. Soya beans is rich in
- a) Protein  
b) Carbohydrate  
c) Oil  
d) Vitamin
72. The fertility of the soil can be increased by growing
- a) cereals  
b) fibre crops  
c) legumes  
d) root crops
73. Who is known as the father of Modern Indian Algology?
- a) M.V.R. Iyengar  
b) Sundaram  
c) Subramaniam  
d) Smith
74. Which plant is affected by canker's disease?
- a) Mango  
b) Coffee  
c) Lemon  
d) None of the above

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64. C	65. B	66. B	67. B	68. C	69. B
70. C	71. A	72. C	73. A	74. C	

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97. Who discovered chlorophyll?  
 a) Dr. B.C. Roy                      b) P.J. Pelbertier  
 c) Hassaet                              d) None of the above
98. Which of the following is a parasitic plant?  
 a) marchantica                      b) kelp  
 c) mushroom                        d) pteris
99. What is the colour of autotrophics?  
 a) Light Yellow                      b) Brown  
 c) Green                                d) Violet
100. Which fruit contains vitamins A to E?  
 a) No such fruit                      b) Apple  
 c) Pineapple                          d) Mango
101. In which part of India, do *sal* trees mostly grow?  
 a) North Eastern                      b) North Western  
 c) South Eastern                      d) South
102. Which gas is absorbed by plants during photosynthesis?  
 a) Iodine                                b) Carbon dioxide  
 c) Chlorine                              d) Nitrogen
103. Which of the following organism does not contain chlorophyll?  
 a) Mosses                                b) Ferns  
 c) Algae                                 d) Fungi
104. Which tree is most useful?  
 a) Coconut tree                      b) Banana  
 c) Acha                                 d) Neem tree
105. Which one of the following is a nutritious grain?  
 a) Groundnut                        b) Bengalgram  
 c) Green gram                        d) None of the above
106. What is the useful product got from fungi?  
 a) Penicillin                         b) Paint  
 c) Oil                                    d) Sugar
107. If all plants vanish from the earth's surface which of the following gases will disappear?  
 a) oxygen                                b) hydrogen  
 c) nitrogen                              d) carbon dioxide

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97. B	98. C	99. C	100. A	101. A	102. B
103. D	104. D	105. C	106. A	107. A	

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108. Which of the following is a carnivorous plant?
  - a) pitcher plant
  - b) urn plant
  - c) ribbon plant
  - d) cacti
109. In which place are thorn forests found?
  - a) Kochi
  - b) Vishakapatnam
  - c) Paradip
  - d) Mangalore
110. *Rafflesia arnoldii* having the biggest flower is a
  - a) root parasite
  - b) stem parasite
  - c) saprophyte
  - d) symbiont
111. Which tree grows faster of the following?
  - a) Teak
  - b) Eucalyptus
  - c) Banyan
  - d) Coconut
112. The part of the flower associated with insect pollination is:
  - a) gynoecium
  - b) corolla
  - c) thalamus
  - d) None of these
113. Edible part of coconut is
  - a) Seed Coat
  - b) Endocarp
  - c) Endosperm
  - d) Carpel Wall
114. Photosynthesis cannot take place in
  - a) Red light
  - b) Blue light
  - c) Ultraviolet light
  - d) Green light
115. Pollination is best defined as
  - a) Transfer of pollen from anther to stigma
  - b) Germination of pollen grains
  - c) Growth of pollen tube in ovule
  - d) Visiting flowers by insects
116. What is the cause for deforestation?
  - a) Destruction
  - b) Rapid explosion of human and livestock population
  - c) Loss of green wealth
  - d) None of these
117. How soil gets eroded?
  - a) By collection of wastes
  - b) By disposal of wastes
  - c) By floods and rains
  - d) By mechanical methods
118. The unicellular alga used in spacecraft to regulate oxygen supply is
  - a) Chlamydomonas
  - b) Chlorella
  - c) Anabaena
  - d) Spirogyra

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108. A	109. B	110. A	111. B	112. A	113. C
114. C	115. A	116. B	117. C	118. B	

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119. Who is the well known Indian Paleobotanist?  
 a) Birbal Sahni                      b) M.S. Swaminathan  
 c) P. Maheshwari                    d) G. Rangaswamy
120. Leaf is modified into pitcher in  
 a) Nepenthes                          b) Gall bladder  
 c) Bladder wort                      d) Utricularia
121. An alga yielding single cell protein of economic importance is  
 a) Chlamydomonas                    b) Spirulina  
 c) Gleocapsa                          d) Cosmarium
122. Wide variety of plants are observed in this part of the world  
 a) tropical regions                    b) temperate regions  
 c) near polar regions                d) high altitudinal areas
123. Orchards are  
 a) fruit gardens                      b) vegetable gardens  
 c) ornamental gardens               d) orchid gardens
124. The Indian plant which became legally significant at international level quite recently was  
 a) tamarind                            b) ginger  
 c) turmeric                            d) tobacco
125. Foreign countries want to get plant materials of this plant from our country keeping in view the problem of chemical pesticides.  
 a) *Pterocarpus marsupium* (vengai)  
 b) *Azadirachta indica* (neem)  
 c) *Acacia arabica* (gum arabic)  
 d) *Eucalyptus globulus*
126. Match the items in List-I with List-II:

List-I					List-II				
A)	Khus oil				1)	Edible food			
B)	Quinine				2)	Protein			
C)	Soyabean				3)	Cinchona			
D)	Mushroom				4)	Vetiveria			
	A	B	C	D					
a)	1	3	4	2					
b)	4	3	2	1					
c)	2	1	4	3					
d)	3	4	2	1					

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119. C    120. A    121. A    122. A    123. A    124. C  
 125. B    126. B

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145. The ratio 9 : 3 : 3 : 1 represents a ratio of  
a) Monohybrid                      b) Dihybrid  
c) Trihybrid                        d) Back cross
146. Which one of the following is correctly matched?  
a) . Manihot - Grain                b) Wheat - Cotyledon  
c) Castor - Endosperm            d) Saccharum - Stem tuber
147. Gnetum is  
a) Herb                                b) Shrub  
c) Climber                          d) Tree
148. Largest living tree on earth is  
a) Eucalyptus                        b) Giant oak  
c) Sequoia                          d) Juniperus
149. Protonema appears in the life cycle of  
a) Riccia                                b) Marchantia  
c) Funaria                          d) Anthoceros
150. Sugar is obtained from  
a) Sugarcane                        b) Beet  
c) Palmyrah                         d) all these
151. When a plant cell is placed in a sugar solution \_\_\_\_\_ takes place.  
a) Osmosis                            b) Plasmolysis  
c) Diffusion                         d) Imbibition
152. Vernation means the arrangement of leaf  
a) on the stem                        b) on the root  
c) inside the bud                    d) outside the bud
153. In plants, energy is produced during  
a) Transpiration                    b) Photosynthesis  
c) Respiration                        d) Absorption
154. The yellowing of leaf is caused by the deficiency of  
a) Iron                                 b) Cobalt  
c) Copper                              d) Zinc
155. Identify the correct sequence of evolution in plants:  
a) Pteridophyte—Gymnosperms—Thallophyte—Bryophyte  
b) Gymnosperms—Pteridophyte—Bryophyte—Thallophyte  
c) Bryophyte—Pteridophyte—Gymnosperms—Thallophyte  
d) Thallophyte—Bryophyte—Pteridophyte—Gymnosperms

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145. A	146. D	147. B	148. C	149. D	150. D
151. C	152. B	153. A	154. D	155. B	

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156. The vascular bundles arranged in a cycas petiole is
  - a) T-shaped
  - b) L-shaped
  - c) C-shaped
  - d) Inverted omega ( $\Omega$ ) shaped
157. Which one of these is correctly matched?
  - a) Paddy - Blast disease
  - b) Sugarcane - Ring disease
  - c) Potato - Leaf spot
  - d) Groundnut - Red rot
158. Each flower has its female part in
  - a) Ovary
  - b) Stigma
  - c) Thalamus
  - d) Ovary, Style, Stigma
159. A plant growing inside another plant of different species symbiotically is called
  - a) Parasite
  - b) Saprophyte
  - c) Semi-parasite
  - d) Endophyte
160. These cells are loosely arranged in a plant body.
  - a) Parenchyma
  - b) Collenchyma
  - c) Sclerenchyma
  - d) Aerenchyma
161. Maximum rate of photosynthesis occurs in
  - a) White light
  - b) Red light
  - c) Green light
  - d) Red and blue light
162. Aquatic plants with floating leaves
  - a) Do not have stomata
  - b) Have stomata on both surface
  - c) Have stomata on lower surface
  - d) Have stomata only on upper surface
163. Which one of the following is correctly matched?
  - a) Phycocyanin - Far-red light
  - b) Phytochrome - Yellow light
  - c) Carotene - Blue light
  - d) Chlorophyll - Green light
164. The radiant energy absorbed by plants results in
  - a) Oxidation of Chlorophyll
  - b) Oxidation of  $\text{CO}_2$
  - c) Reduction of Oxygen
  - d) Photolysis of Water

156. D   157. B   158. D   159. B   160. A   161. B  
162. D   163. A   164. D

165. Formation of fruit without fertilisation is known as  
 a) Polygamy                      b) Polyembryony  
 c) Parthenocarpy                d) Parthenogenesis
166. Which one is correctly matched?  
 a) Black gram - Tree              b) Teakwood - Climber  
 c) Banana - Herb                 d) Bengal gram - Shrub
167. How many types of cell divisions are there in plant cells?  
 a) 1                                  b) 2  
 c) 3                                  d) 4
168. Flowers emit fragrance  
 a) to purify air                      b) to drive away flies  
 c) to attract insects                d) to perform all the above
169. Recently pattern right was given to this plant in America.  
 a) Ginger                          b) Turmeric  
 c) Onion                          d) Garlic
170. The male cone of cycas consists  
 a) Microsporophylls                b) Megasporophylls  
 c) Microsporangia                 d) Megasporangia
171. Botanical name of paddy is  
 a) *Triticum vulgare*                b) *Solanum nigrum*  
 c) *Oryza sativa*                    d) *Eleusine coracana*
172. The male filament of Oedogonium is known as  
 a) Gynandrium                      b) Nannandrium  
 c) Micrandrium                    d) Megandrium
173. Guard cells in the stomata help in  
 a) Transpiration                    b) Respiration  
 c) Photosynthesis                 d) All the above
174. Syngeneses means union of  
 a) Anthers                          b) Stamens  
 c) Filaments                        d) Androecium and Gynoecium
175. The study of individual plant throughout their life-history in relation to the environment is called  
 a) Autecology                        b) Synecology  
 c) Biology                          d) Life-cycle
176. Which one is correctly matched?  
 a) Papain - Tobacco                b) Jute - Phloem fibre  
 c) Nicotine - Tea                    d) Thein - Papaya

165. C	166. D	167. B	168. D	169. B	170. B
171. C	172. D	173. D	174. D	175. B	176. B



177. Fern prothallus is a  
 a) Gametophyte                      b) Sporophyte  
 c) Vegetative body                  d) None of these
178. Consider the following statements :  
**Assertion (A)** : Onion is a monocot plant.  
**Reason (R)** : It has adventitious roots.  
 Now select your answer according to the coding scheme given below:  
 a) Both A and R are true and R is the correct explanation of A  
 b) Both A and R are true, but R is not the correct explanation of A  
 c) A is true, but R is false      d) A is false, and R is true
179. The fruit of mango belongs to the type  
 a) Drupe                                  b) Berry  
 c) Pepo                                    d) Pome
180. It has been observed that after effects of low temperature treatment is helpful in promoting the flowering in certain plants. Through this the vegetative period of plant becomes short and early flowering takes place. This phenomenon is known as  
 a) Photoperiodism                      b) Floreignation  
 c) Vernalisation                        d) Heliotropism
181. Which one of the following plants can fix nitrogen from air?  
 a) Rice                                    b) Wheat  
 c) Pea                                      d) Maize
182. Which one of the following is a man-made cereal not found in nature?  
 a) Dwarf wheat                          b) Hybrid maize  
 c) Triticale                                d) Soyabean
183. Sugarcane, sugar beet, sweet pea, chickpea, pigeonpea and French bean belong to  
 a) two plant families                  b) three plant families  
 c) four plant families                  d) five plant families
184. Which one of the following crops enriches the nitrogen content in soil?  
 a) Potato                                  b) Sorghum  
 c) Sunflower                              d) Pea

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177. A    178. B    179. A    180. C    181. C    182. C  
 183. B    184. D

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199. The important function of flower is
  - a) Photosynthesis
  - b) Reproduction
  - c) Respiration
  - d) Transpiration
200. Which part of the fertilised flower turns into fruit?
  - a) Ovary
  - b) Corolla
  - c) Calyx
  - d) Filament
201. Which part of the fertilised flower turns into seed?
  - a) locules
  - b) ovule
  - c) stigma
  - d) style
202. The edible portion of the fruit in mango is
  - a) endocarp
  - b) mesocarp
  - c) epicarp
  - d) seed
203. The type of fruit seen in jack is called
  - a) multiple fruit
  - b) fleshy fruit
  - c) dry fruit
  - d) aggregate fruit
204. The number of described species of plants growing on earth is over
  - a) 2,00,000
  - b) 1,50,000
  - c) 4,00,000
  - d) 3,00,000
205. The largest herbarium in the world is at
  - a) Washington
  - b) Kew
  - c) Leningrad
  - d) London
206. The national herbarium of India is located at
  - a) Delhi
  - b) Mumbai
  - c) Calcutta
  - d) Chennai
207. The first botanist to introduce binomial system of nomenclature was
  - a) Linnaeus
  - b) Bauhin
  - c) Bentham
  - d) Darwin
208. The largest family among flowering plants is
  - a) Caesapiniaceae
  - b) Asteraceae
  - c) Rubiaceae
  - d) Cucurbitaceae
209. The binomial of the plant which yields pyrethrum is
  - a) *Calendula officinalis*
  - b) *Tanacetum cinerariifolium*
  - c) *Helianthus annus*
  - d) *Tagetus erecta*

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199. B	200. A	201. B	202. B	203. A	204. C
205. B	206. C	207. A	208. B	209. B	

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210. Red dye used for dyeing silk is obtained from the plant  
 a) *Tagetes erecta*                      b) *Calendula officinalis*  
 c) *Carthamus tinctorius*              d) *Zinnia elegans*
211. The medicinal plant used in the treatment of jaundice is  
 a) *Carthamus tinctorius*              b) *Zinnia elegans*  
 c) *Eclypta prostrata*                  d) *Helianthus annus*
212. The German scientist who rediscovered Mendel's work was  
 a) Hugo de Vries                      b) Darwin  
 c) Lamarck                              d) Correns
213. The plant chosen by Mendel for his experiment was  
 a) *Pisum sativum*                      b) *Arachis hypogea*  
 c) Maize                                  d) *Cucurbita*
214. The "factors" referred by Mendel, are now called as  
 a) Gene                                  b) Recessive factor  
 c) Chromosome                      d) DNA
215. The group of enzymes that can cut DNA into fragments are called as  
 a) Nucleases                          b) Restriction endonucleases  
 c) Lipase                                  d) Ligase
216. The genetically uniform population developed by tissue culture method are called as  
 a) Replicon                              b) Inoculum  
 c) Callus                                  d) Clone
217. \_\_\_\_\_ is readily absorbed by root hairs.  
 a) gravitational water              b) hygroscopic water  
 c) capillary water                      d) osmotic water
218. The apparatus used to measure transpiration is  
 a) Auxanometer                      b) Manometer  
 c) Respiroscope                      d) Ganong's Potometer
219. Fermentation is  
 a) Citric acid cycle                      b) Anaerobic respiration  
 c) Aerobic respiration                  d) Glycolysis
220. The instrument that is used to measure the growth in plants is  
 a) auxanometer                      b) respiroscope  
 c) potometer                              d) manometer

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210. C	211. C	212. D	213. A	214. A	215. B
216. D	217. C	218. D	219. B	220. A	

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232. A. Caterpillars damage fodder crop, lucerne (*Medicago sativa*).  
 B. Caterpillars were killed by certain polyhedral viruses.  
 a) Both are true                      b) Both are false  
 c) A is true, B is false              d) B is true, A is false
233. Tobacco mosaic virus (TMV) affects  
 a) Tobacco  
 b) Tomato  
 c) Tobacco and Tomaot  
 d) all dicotyledonous plants, particularly tobacco and tomato
234. Viruses affect tobacco crop  
 a) in tropics                      b) in temperate regions  
 c) in sub-tropics                  d) world over
235. Hemp, jute and coconut are \_\_\_\_\_ plants.  
 a) commercial                      b) fibre yielding  
 c) oil yielding                      d) food yielding
236. Chara is an attached form of alga  
 a) true                      b) false  
 c) marine alga                  d) lithophytic alga
237. *Chlorella* is a \_\_\_\_\_ alga.  
 a) green                      b) red  
 c) brown                      d) blue-green
238. Chara is otherwise known as  
 a) liverwort                      b) hornwort  
 c) stonewort                      d) quillwort
239. The roots of chara are called  
 a) lateral branches                  b) bulbil  
 c) primary roots                      d) rhizoids
240. The male sex organ of chara is  
 a) antherozoids                      b) globule  
 c) nucule                      d) bulbil
241. The calcareous deposits of chara make the plant \_\_\_\_\_.  
 a) soft                      b) thin  
 c) yellow                      d) coarser
242. Chara is a \_\_\_\_\_ alga.  
 a) marine water                      b) fresh water  
 c) brackish water                      d) cosmopolitan

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232. A	233. D	234. D	235. B	236. A	237. A
238. C	239. D	240. A	241. D	242. B	

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**252. Match the following:****List I**

- 1) Anylum stars
- 2) Girdle-shaped chloroplast
- 3) Cyanophyta
- 4) Paramylum starch

**List II**

- i) Euglenophyta
- ii) Absence of sexual reproduction
- iii) Spirogyra
- iv) Vegetative reproduction in chara

**Codes:**

	A	B	C	D
a)	4	3	2	1
b)	3	4	2	1
c)	4	1	2	3
d)	2	1	3	4

**253. Penicillin grows on**

- a) organic matter
- b) fresh water
- c) hills
- d) rock

**254. Plant body of penicillium is**

- a) stem
- b) thalkes
- c) mycelium
- d) filament

**255. The spores of Penicillium are**

- a) myxospore
- b) aplanospore
- c) conidiospores
- d) zoospores

**256. Bracket fungi is the other name for**

- a) Polyporus
- b) Agaricus
- c) Penicillium
- d) Aspergillus

**257. The colour of basidiospores is**

- a) red
- b) black
- c) brown
- d) green

**258. The sex organs of bryophytes are protected by**

- a) Lyst
- b) Paraphysis
- c) Jacket cells
- d) Simple leaves

**259. Rhizoids are meant for**

- a) absorption of water
- b) anchorage and absorption of water
- c) vegetative propagation
- d) storage

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252. A	253. A	254. C	255. C	256. A	257. C
258. C	259. B				

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260. \_\_\_\_\_ are present in bryophytes.

- a) Heterospores                      b) Aspores  
c) Apöspores                        d) Homospores

261. \_\_\_\_\_ are meant for vegetative propagation of the thallus.

- a) Gemma cups                        b) Antherozoids  
c) Antheridium                        d) Archegonium

262. Male sex organ of Polytrichum is

- a) bulbil                                b) protonema  
c) foot                                  d) antheridium

263. Vegetative reproduction in Polytrichum takes place by

- a) primary protonema                b) gemma cups  
c) either (a) or (b)                d) none of the above

264. In Polytrichum the young leaves are arranged

- a) helically                            b) spirally  
c) properly                            d) uniformly

265. Match the following with reference to polytrichum:

**List I**

**List II**

- |                            |                |
|----------------------------|----------------|
| A) Male sex organ          | 1) rhizoids    |
| B) Female sex organ        | 2) foot        |
| C) Gametophyte is fixed by | 3) archegonium |
| D) Sporophyte is fixed by  | 4) antheridium |

Codes:

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 2 | 3 | 4 | 1 |
| b) | 4 | 3 | 1 | 2 |
| c) | 4 | 1 | 3 | 2 |
| d) | 3 | 4 | 1 | 2 |

266. \_\_\_\_\_ grows in submerged swampy meadows.

- a) Funaria                              b) Sphagnum  
c) Marchantia                        d) Anthoceros

267. The sporophyte of Adiantum has chromosomes of \_\_\_\_\_ nature.

- a) polyploid                            b) triploid  
c) haploid                              d) diploid

268. Adiantum is commonly known as

- a) tree fern                              b) branch fern  
c) maiden hair fern                d) garden hair fern

- 
- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 260. D | 261. A | 262. D | 263. C | 264. B | 265. B |
| 266. C | 267. D | 268. C |        |        |        |
-



- 269.** The root system of *Adiantum* is  
a) coiled                      b) hair-like  
c) rod-like                  d) spherical
- 270.** The leaves with sori are described as  
a) scale leaves              b) sporophylls  
c) leaflet                    d) compound leaf
- 271.** Pteridophytes are vascular plants that contain \_\_\_\_\_ and \_\_\_\_\_  
a) xylem and pith              b) phloem and pith  
c) xylem and phloem         d) pith and ground tissue
- 272.** The thick walled cells found in the sporangial walls are  
a) calyptra                    b) indusium  
c) annulus                    d) stromium
- 273.** Spherical sporangia of *Adiantum* are arranged on stalks called  
a) Conidiophores              b) Zygozophores  
c) Sporangiozophores        d) Androphores
- 274.** \_\_\_\_\_ is known as club moss.  
a) Isoetes                      b) Lepidodendrum  
c) Selaginella                  d) Nephrolepis
- 275.** *Selaginella* \_\_\_\_\_ is a climber.  
a) alligens                      b) krussiana  
c) trachyphylla                d) caudatum
- 276.** The vernation in young leaves of ferns is  
a) opposite                    b) whirled  
c) circinate                    d) alternate
- 277.** Cycadales and Ginkgoales are popularly known as  
a) Amphibians                b) Living fossils  
c) Hydrophytes                d) Xerophytes
- 278.** \_\_\_\_\_ plant has the life cycle of 4000 years.  
a) Pinus                        b) Cycas  
c) Gnetum                      d) Sequoia
- 279.** \_\_\_\_\_ leaves are brown membranous and protective in function.  
a) foliage                      b) needle  
c) scale                        d) sporophyllous

269. B    270. B    271. C    272. C    273. C    274. C  
275. C    276. C    277. B    278. D    279. C

288. Botanical name of wheat plant is  
 a) *Triticum* b) *Oryza*  
 c) *Bambusa* d) *Ricinus*
289. The cells that are found more in the hypodermis of the dicot stem is  
 a) parenchyma b) fibres  
 c) medullary rays d) collenchyma
290. The cells that are with irregular thickening in the dicot stem is  
 a) parenchyma b) chlorenchyma  
 c) sclerenchyma d) collenchyma
291. The unit of photosynthesis in green plants is called  
 a) Phytochrome b) Chromatophore  
 c) Quantosome d) Ubiquinone
292. The root system of monocot plant is \_\_\_\_\_ system.  
 a) taproot b) fibrous root  
 c) tuberous root d) storage root
293. The binomial of groundnut is  
 a) *Glycine max* b) *Oryza sativa*  
 c) *Arachis hypogaea* d) *Helianthus annuus*
294. Pith is formed of \_\_\_\_\_ cells.  
 a) parenchyma b) vessel  
 c) companion d) tracheary
295. Root nodules are helpful in \_\_\_\_\_ fixation.  
 a) C b) H  
 c) N d) O
296. Three types of wheat plants are  
 a) Durum, Einkorn and Soft b) Durum, Soft and Hard  
 c) Einkorn, Tall and Dwarf d) Einkorn, Soft and Hard
297. Green plants of the forests are known as  
 a) woods  
 b) swamp lands  
 c) consumers of food chain  
 d) primary producers of food chain
298. The broad leaves of tall trees absorb  
 a) rain clouds b) nitrogen gas  
 c) deposits of dust d) birds

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288. A	289. D	290. D	291. C	292. A	293. C
294. A	295. C	296. A	297. D	298. A	

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299. Plants growing on acidic soils are categorised as  
 a) Halophytes                      b) Psammophytes  
 c) Oxylophytes.                  d) Chasmophytes
300. Birch and oak are prevalent in \_\_\_\_\_ forests.  
 a) Tropical rain                      b) Tropical deciduous  
 c) Temperate deciduous          d) Temperate evergreen
301. Pine and fir are abundant in \_\_\_\_\_ forests.  
 a) Tropical                              b) Coniferous  
 c) Temperate                          d) Polar
302. Binomial system was introduced by  
 a) Carl Linnaeus                      b) Gaspard Bauhin  
 c) Theophrastus                      d) Hutchinson
303. *Solanum tuberosum* is  
 a) Tomato                              b) Potato  
 c) Banana                              d) Mango
304. The collection of dried plant specimens is called  
 a) Vivarium                              b) Aquarium  
 c) Terrarium                          d) Herbarium
305. The art of describing plants using botanical terminology is called  
 a) Photography                      b) Topography  
 c) Phytography                      d) Geography
306. The common transport form of sugar in plants is  
 a) Glucose                              b) Fructose  
 c) Sucrose                              d) Galactose
307. *Nicotiana tabacum* is commonly known as  
 a) tomato                              b) tobacco  
 c) brinjal                              d) mango
308. *Lycopersicon esculentum* is  
 a) Potato                              b) Tomato  
 c) Brinjal                              d) Tobacco
309. \_\_\_\_\_ is considered as "Father of plant genera".  
 a) Tournefort                          b) Brunfels  
 c) John Ray                              d) Linnaeus
310. Artificial classification is based on \_\_\_\_\_ characters of plant.  
 a) few                                      b) chemical  
 c) embryological                      d) physiological

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299. C	300. C	301. B	302. B	303. B	304. D
305. C	306. C	307. B	308. B	309. D	310. A

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311. Bentham and Hooker's system of classification is known as \_\_\_\_\_ system of classification.
- a) natural                      b) artificial  
c) phylogenetic              d) modern
312. Epicalyx is seen in
- a) Malvaceae                  b) Fabaceae  
c) Asteraceae                  d) Musaceae
313. \_\_\_\_\_ is the oil-yielding plant.
- a) Mango                      b) Groundnut  
c) Potato                      d) Tomato
314. The common name for *Sesbania grandis* is
- a) Pea                          b) Agathi  
c) Green gram                d) Red gram
315. Quinine is extracted from
- a) Coffee                      b) Cinchona  
c) Rubia                        d) Gardenia
316. The fruit of coffee plant is a
- a) drupe                        b) cypsela  
c) schizocarp                d) berry
317. Carrot is a \_\_\_\_\_ tuber.
- a) root                         b) stem  
c) rhizome                      d) foliage leaf
318. *Eclipta alba* is a
- a) tree                         b) climber  
c) herb                         d) shrub
319. Pyrethrum is
- a) a vegetable                b) an insecticide  
c) a flower                    d) a fruit
320. *Helianthus annuus* is commonly known as
- a) soyabean                  b) groundnut  
c) sunflower                 d) safflower
321. Chicory is extracted from \_\_\_\_\_ of the plant.
- a) dried flowers              b) roots  
c) leaves                      d) stem
322. Phyllotaxy is the arrangement of
- a) leaves                      b) stem  
c) petals                      d) sepals

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311. A	312. A	313. B	314. B	315. B	316. A
317. A	318. C	319. B	320. C	321. B	322. A

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332. Cytochromes in plant cells function mainly as  
 a) Oxygen acceptor                      b)  $\text{CO}_2$  acceptor  
 c) Electron acceptor                    d)  $\text{H}_2\text{O}$  acceptor
333. Which would do maximum harm to a tree?  
 a) The loss of half of its leaves  
 b) The loss of all its leaves  
 c) The loss of half of its branches  
 d) The loss of its bark
334. Orobanche plant is  
 a) Partial parasite                      b) Total root parasite  
 c) Symbiont                              d) Total stem parasite
335. The source of oxygen liberated in photosynthesis is  
 a) Carbohydrate already present in leaf  
 b) Water  
 c) A photosynthetic enzyme  
 d) Carbon dioxide
336. In  $\text{C}_4$  plants, initial acceptor of  $\text{CO}_2$  is  
 a) Ribulose-5-phosphate              b) Phosphophenol pyruvic acid  
 c) 3-PGA                                  d) Ribulose 1-4 diphosphate
337. Which one of the following is the earliest land plant?  
 a) Rhynia                                  b) Hornea  
 c) Cordaites                              d) Cooksonia
338. Neurospora is a very good taxon for  
 a) Biofertilizer                          b) Biological control  
 c) Genetical studies                    d) Antibiotics
339. The substrate for photorespiration is  
 a)  $\text{C}_6$ -acid                                b)  $\text{C}_1$ -acid  
 c)  $\text{C}_3$ -acid                                d)  $\text{C}_2$ -acid
340. Phytotron is a facility to  
 a) Grow disease free plants  
 b) Grow plants under controlled conditions  
 c) Micropropagate plants  
 d) Conserve endangered plants
341. The Scutellum of the grass embryo is a  
 a) Photosynthetic organ              b) Reserve food storage organ  
 c) Absorptive organ                    d) Vestigial organ

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332. C	333. D	334. B	335. B	336. B	337. A
338. C	339. D	340. B	341. D		

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342. Cotton is a  
a) Surface fibre                      b) Hard fibre  
c) Bast fibre                        d) Stem fibre
343. Nobel Prize was awarded to \_\_\_\_\_ for hybridoma technology.  
a) Pasteur  
b) Huber, Michel and Dissenhofers  
c) Jernes, Kohler and Milstein  
d) None of the above
344. A fast growing leguminous tree useful as fodder wood, green manure and nitrogen fixer is  
a) Clover                              b) Parkinsonia  
c) Acacia                              d) Leucaena
345. In botanical nomenclature of plants  
a) Genus is written after the species  
b) Both in genus and species the first letter is a capital letter  
c) Genus and species may be same name  
d) Both genus and species are printed in italics
346. The secondary wood of Pinus is characterised by  
a) Presence of resin canals    b) Presence of resin ducts  
c) Absence of resin ducts    d) Presence of Vessels
347. 'Die back' of citrus and 'reclamation' of legumes and cereals is due to the deficiency of  
a) Copper                              b) Sodium  
c) Zinc                                 d) Molybdenum
348. If the stomata are more on the under surface of the leaf than on upper, it comes under  
a) Oat type                            b) Barley type  
c) Potato type                        d) Patamoge ton type
349. What is the action spectrum of transpiration?  
a) Green and ultraviolet    b) Orange and red  
c) Blue and far red            d) Blue and red
350. Mulching is a process that helps in  
a) Moisture conservation    b) Weed control  
c) Soil fertility                      d) Improvement of soil structure

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342. A    343. C    344. D    345. D    346. A    347. A  
348. C    349. D    350. A

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360. Some seeds require red light for germination. The pigment involved in this is known as  
 a) Chlorophyll                      b) Cytochrome  
 c) Phycocyanin                    d) Phytochrome.
361. The spores in fern are produced by  
 a) Archegonia                      b) Prothallus  
 c) Protonema                        d) Sporangia
362. The visible plant of fern is  
 a) Gametophyte                    b) Protonema  
 c) Sporophyte                      d) None of these
363. Circinate vernation is a characteristic of leaves of  
 a) Angiosperms                    b) Ferns  
 c) Gymnosperms                   d) Moss plants
364. Plants that grow in saline soil are called  
 a) Halophytes                      b) Hydrophytes  
 c) Mesophytes                      d) Thallobytes
365. A typical angiospermic leaf consists of  
 a) A lamina only                    b) A lamina and a leaf base  
 c) A lamina, a petiole and a leaf base  
 d) A petiole and a lamina
366. Aestivation may be defined as  
 a) Arrangement of floral leaves in the bud condition  
 b) Arrangement of ovules in the ovary  
 c) Attachment of filaments to the anthers  
 d) Union of floral parts
367. Placentation means  
 a) Fixation of anthers to the filament  
 b) Fusion of stamens with the petals  
 c) Union of sepals and petals  
 d) The mode of arrangement of ovules in the ovary
368. Which of the following pairing is not correct?  
 a) Brinjal-Berry                    b) Coconut-Drupe  
 c) Lemon-Pome                    d) All these pairs are correct
369. Which of the following tissues is lacking both in pteridophytes and gymnosperms?  
 a) Phloem                            b) Tracheids  
 c) Vessels                            d) Xylem

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360. D	361. D	362. C	363. B	364. A	365. C
366. A	367. D	368. C	369. C		

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407. Who, among the following scientists, is associated with the hybridisation of garden pea?
- a) Robert Brown                      b) John Goss  
c) Joseph Kolruter                    d) Gregor Mendel
408. In water hyacinth, the swollen petiole helps it in
- a) Vegetative propagation    b) Vigorous growth  
c) Storage of food                  d) Buoyancy
409. The one which does not belong to underground stem vegetable is
- a) onion                                  b) garlic  
c) kachalu                                d) sugar beet
410. The plant used as a diuretic and in treating jaundice is
- a) *Ricinus communis*              b) *Jatropha curcas*  
c) *Phyllanthus fraternus*          d) *Hevea brasiliensis*
411. Plants are killed in winter by frost
- a) Because of desiccation and mechanical damage to the tissues.  
b) Because no photosynthesis takes place at such low temperature  
c) Because respiration ceases at such low temperature  
d) Because there is no transpiration
412. Deforestation has an alarming effect on
- a) Increase in grazing area    b) Sunlight  
c) Weed control                  d) Soil erosion
413. The stem of water plants usually have
- a) A well-developed aerenchyma  
b) A well-developed stomatal system  
c) A well-developed vascular system  
d) A well-developed root system
414. Artificial light can
- a) Destroy chlorophyll  
b) Synthesise chlorophyll  
c) Bring about photosynthesis  
d) Not bring about photosynthesis
415. The food in onion is stored in the form of
- a) Cellulose                              b) Protein  
c) Starch                                  d) Sugar

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407. D    408. D    409. D    410. C    411. A    412. D  
413. A    414. C    415. A

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446. Historically, who amongst the following recognised in 1727 A.D. that sunlight and air are important for the growth of plants?  
a) Joseph Priestley                      b) Jan Ingenhousz  
c) Stephen Hales                        d) Lavoisier
447. Which one of the following forms of protein is stored in leguminous seeds?  
a) Glutelin                                b) Prolamine  
c) Globuline                              d) Albumin
448. Which one of the following commercially important fruit is a true nut?  
a) Cashewnut                              b) Coconut  
c) Groundnut                              d) Arecanut
449. Which of the following micronutrients increases the absorption of water and calcium in plants?  
a) Copper                                  b) Boron  
c) Molybdenum                           d) Manganese
450. Which of the following plant micronutrients is involved in the electron transport in photosynthesis?  
a) Manganese                              b) Molybdenum  
c) Copper                                  d) Zinc
451. All of the following are examples of berry type of fruit, except  
a) Lady's finger                          b) Banana  
c) Grape                                    d) Tomato
452. The deficiency of which of the following micronutrients causes the death of the stem and root apices?  
a) Boron                                    b) Copper  
c) Manganese                              d) Zinc
453. Which of the following micronutrients plays an important role in the nitrogen metabolism of plants, especially in the reduction of nitrate?  
a) Boron                                    b) Copper  
c) Molybdenum                           d) Zinc
454. In a field, it was found that pea plants did not develop root nodules. This may be due to the absence of suitable  
a) Bryophyta                                b) Pterophyta  
c) Anthrophyta                            d) None of these

455. Which tissue is responsible for the passage of water in plants?  
 a) sclerenchyma                      b) xylem  
 c) phloem                              d) collenchymatous cells
456. Which one of the following pairs is not correctly matched?  
 a) Chloroplast - Photosynthesis  
 b) Ribosome - Protein synthesis  
 c) Mitochondria - Respiration  
 d) Golgi body - Excretion
457. Which one of the following plant groups represents 'vascular cryptogams'?  
 a) Bryophytes                          b) Pteridophytes  
 c) Gymnosperms                      d) Angiosperms
458. Dioecious species are those which bear  
 a) male and female flowers on the same plant  
 b) male and female flowers on separate plants  
 c) perfect flowers on all plants  
 d) perfect and imperfect flowers on separate plants
459. Plants receive their nutrients mainly from  
 a) chlorophyll                          b) atmosphere  
 c) light                                      d) soil
460. The flycatcher plant (*Cephalotus follicularis*) is native to  
 a) West Australia                      b) South America  
 c) Indonesia                              d) None of the above
461. Plants that grow in saline water are called  
 a) halophytes                              b) hydrophytes  
 c) mesophytes                              d) thallophytes
462. Which part of the carpel receives pollen grains as a result of pollination?  
 a) Style                                      b) Stigma  
 c) Ovary                                      d) Pollen tube
463. The cactus is a modified form of  
 a) stem                                      b) leaves  
 c) root    d) flower
464. The banana family is  
 a) Asteraceae                              b) Musaceae  
 c) Arecaceae                              d) Solanaceae

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455. B	456. D	457. C	458. A	459. D	460. A
461. A	462. B	463. A	464. B		

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486. A    487. A    488. D    489. C    490. C    491. A  
492. A    493. C    494. B    495. B    496. B

497. The best example for artificial system of classification is  
a) Bentham and Hooker system of classification  
b) Phylogenetic system of classification  
c) Darwin's system of classification  
d) Carolous Linnaeus system of classification
498. Abaca cloth is obtained from  
a) *Musa chinensis*                      b) *Hibiscus cannabinus*  
c) *Musa textilis*                        d) *Strelitzia reginae*
499. The phylogenetic system of classification was proposed by  
a) Bentham and Hooker      b) Adolf Engler and Karl Prantl  
c) Darwin and Malthas      d) None of the above
500. The integrated system of classification of flowering plants was published by  
a) Arthur Cronquist              b) Joseph Dolton Hooker  
c) Darwin                          d) Adolf Engler



## • ZOOLOGY •

1. Which living being lives for a very long time?  
a) Tortoise                      b) Whale  
c) Elephant                      d) Man
2. What is the study of bird's eggs known as?  
a) Zoology                      b) Oology  
c) Geology                      d) Penology
3. How many legs does a bee have?  
a) 2                                  b) 5  
c) 6                                  d) None of the above
4. In which region species called 'catfish' exist?  
a) India                              b) Europe  
c) Africa                              d) None of the above
5. Name the driest animal in the world.  
a) Dog                              b) Orang-utan  
c) Man                              d) Otter
6. Which is one of the oldest type of vertebrate animals in existence?  
a) Tortoise                      b) Whale  
c) Lion                              d) None of the above
7. Man belongs to phylum  
a) Chordata                      b) Mollusca  
c) Amphibia                      d) Porifera
8. Bees are blind to which colour?  
a) Yellow                      b) Red  
c) Green                      d) Not blind to any colour
9. Which animal has got the peculiar feature of falling and growing temporary horns?  
a) Forest buffaloes              b) Rhinoceros  
c) Delhi Buffalo              d) None of the above
10. Which bird has only one eye?  
a) Duck                      b) Penguin  
c) Crow                      d) Ostrich

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Ans:	1. A	2. B	3. C	4. C	5. D	6. A
	7. A	8. B	9. B	10. D		

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11. Black widow is the name of a
  - a) mosquito
  - b) spider
  - c) house-fly
  - d) cockroach
12. Which bird can remain motionless in air?
  - a) Hummingbird
  - b) Owl
  - c) Eagle
  - d) None of the above
13. Which one of the following is called "Largest Cat"?
  - a) Lion
  - b) Leopard
  - c) Fox
  - d) None of the above
14. Which animal has blue blood?
  - a) Cockroach
  - b) Octopus
  - c) Tiger
  - d) None of the above
15. Which is a bisexual animal?
  - a) Earthworm
  - b) Man
  - c) Lion
  - d) None of the above
16. Which one of the following birds can twist its head in a complete circle?
  - a) Owl
  - b) Crow
  - c) Peacock
  - d) None of the above
17. Which one of the following is called "Sister Sparrow"?
  - a) Crow
  - b) Owl
  - c) Peacock
  - d) Cuckoo
18. Which bird can fly backwards?
  - a) Kiwi
  - b) Hummingbird
  - c) Ostrich
  - d) Parrot
19. Which animal is called 'poor man's cow'?
  - a) Goat
  - b) Donkey
  - c) Monkey
  - d) None of the above
20. Which animal having a spinal cord lives for a long time?
  - a) Lion
  - b) Elephant
  - c) Tortoise
  - d) Man
21. Which bird barks like a dog?
  - a) Kagu
  - b) Ostrich
  - c) Kiwi
  - d) Bat
22. Name the earliest animal in the world.
  - a) Dinosaur
  - b) Whale
  - c) Tortoise
  - d) None of the above

11. B	12. A	13. A	14. B	15. A	16. A
17. D	18. B	19. A	20. C	21. A	22. A

23. B    24. D    25. A    26. A    27. A    28. B  
29. A    30. C    31. A    32. C    33. A

34. Where can you see orang-utans?  
 a) Sumathra and Borneo      b) Africa  
 c) Nigeria                      d) Iceland
35. How many livers does a cow have?  
 a) 1                                b) 2  
 c) 3                                d) 4
36. Where can you see electric fish?  
 a) Nile                            b) Amazon  
 c) Krishna                      d) Jhelum
37. Where can you see 'Golden Toad' in the world?  
 a) Chilka lake  
 b) Pacific ocean  
 c) Costa Rica in Central America  
 d) None of the above
38. What is the cause for the milk fever in cows?  
 a) Lack of calcium            b) Lack of vitamin A  
 c) There is no such fever      d) None of the above
39. How do birds breathe?  
 a) Through nose                b) Through bones  
 c) Through skin                d) None of the above
40. What is the colour of a bat's egg?  
 a) White                         b) No definite colour  
 c) It does not lay eggs        d) None of the above
41. Where can you see flying snakes?  
 a) Java                          b) Mesopotamia  
 c) Budápest                    d) Patna
42. What is the name of the animal that always lives in a tree?  
 a) Sloth                         b) Fox  
 c) Orang-utan                 d) Monkey
43. Camel increases its body temperature from  $37^{\circ}\text{C}$  to  $41^{\circ}\text{C}$  during very hot weather. This helps it in  
 a) reducing perspiration      b) increasing breathing rhythm  
 c) increasing perspiration    d) reducing breathing rhythm
44. Where can we see the tree frogs?  
 a) Mesopotamia                b) Sahara desert  
 c) Tropical forests            d) None of the above

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34. A	35. D	36. B	37. C	38. A	39. B
40. C	41. A	42. A	43. B	44. C	

---

45. Where can you see the largest lizard in the world?  
 a) Indonesian islands      b) Sahara desert  
 c) South East of Asia      d) None of the above
46. Which is the breathing organ of amphibians?  
 a) Skin      b) Lung  
 c) Throat      d) Eye
47. Where can you see the largest frog in the world?  
 a) Morocco      b) Egypt  
 c) Equatorial Guinea      d) Scotland
48. Which bird eats stones?  
 a) Ostrich      b) Humming bird  
 c) Owl      d) No bird eats so
49. Which bird flies under water?  
 a) Parrot      b) Owl  
 c) Penguin      d) None of the above
50. Where can you see the most deadly poisonous amphibian?  
 a) South America      b) South Africa  
 c) Forests in China      d) None of the above
51. Which is the animal other than man, that can differentiate between different colours?  
 a) Bat      b) Lion  
 c) Ape      d) None of the above
52. Where can you see the smallest amphibian in the world?  
 a) Cuba      b) South Pole  
 c) North Pole      d) Denmark
53. Which is the animal that has a tongue, larger than its body?  
 a) Crocodile      b) Chameleon  
 c) Kangaroo      d) There is no such animal
54. Which is the animal that never drinks water?  
 a) Flying squirrel      b) Flying fox  
 c) Kangaroo rat      d) None of the above
55. What is the generic name of silver fish?  
 a) Lepismatidae      b) Ephimer  
 c) Chiton      d) Cicada
56. Which is the fish that has three hearts?  
 a) Cuttlefish      b) Barasuda Fish  
 c) Dolphin      d) None of the above

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45. A	46. A	47. C	48. A	49. D	50. A
51. C	52. A	53. B	54. C	55. A	56. A

---

57. Where can you see the fishes called 'man-eaters'?  
 a) South African Sea      b) South American Sea  
 c) Amazon River      d) Dead Sea
58. There are approximately \_\_\_\_\_ living species of birds.  
 a) 6,500      b) 8,600  
 c) 10,000      d) None of the above
59. Which animal has got a lot of taste buds?  
 a) Deer      b) Cat  
 c) Man      d) Elephant
60. Where can you see the largest butterfly in the world?  
 a) Scandinavia      b) Bandung  
 c) New Guinea      d) Amarnath in India
61. \_\_\_\_\_ of all living mammal species are rodents.  
 a) 25%      b) 40%  
 c) 50%      d) None of the above
62. Which one of the following is the longest living insect?  
 a) Queen termite      b) Mayfly  
 c) Bug      d) None of the above
63. Which is the fastest fish?  
 a) Molamola fish      b) Cosmopolitan Tail fish  
 c) Flying fish      d) None of the above
64. How many eyes does the spider have?  
 a) 4      b) 6  
 c) 8      d) 10
65. What is the other name for the breast muscle?  
 a) Scapula      b) Pectoralis  
 c) Gluteus      d) None of the above
66. What are olfactories?  
 a) Oil factories      b) Spice factory  
 c) Organ of smell      d) Organ of hearing
67. Which organisms of the following pairs are usually primary consumers in a forest ecosystem?  
 a) Rabbit and snake      b) Deer and rabbit  
 c) Frog and deer      d) Earthworm and snake
68. How are vertebrates segmented?  
 a) Inter segmented      b) Intra segmented  
 c) No segmentation      d) Segmentation occasionally

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57. B	58. B	59. B	60. C	61. B	62. A
63. C	64. C	65. B	66. C.	67. B	68. A

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69. Which of the following is mediated cutaneous organ?
  - a) Touch
  - b) Warmth
  - c) Cold
  - d) All the above
70. Fishes respire through their
  - a) Lungs
  - b) Ear
  - c) Nose
  - d) Gills
71. What do you mean by gustatory organ?
  - a) Hair
  - b) Tastebud
  - c) Olfactory organs
  - d) None of the above
72. Which one of the following is not much important for the life of protoplasm?
  - a) Air
  - b) Heat
  - c) Water
  - d) Food
73. Which of the following was Aristotle's classification of animals?
  - a) Vertebrata and Invertebrata
  - b) Enaemia and Anaemia
  - c) Protozoa and Metazoa
  - d) Chordata and Non-chordata
74. Which one of the following is autotrophic?
  - a) Hydra
  - b) Euglena
  - c) Bacteria
  - d) Virus
75. Aves are
  - a) Warm-blooded
  - b) Cold-blooded
  - c) Both (a) and (b)
  - d) None of the above
76. Which one of the following is not an insect?
  - a) Bug
  - b) Mosquito
  - c) Spider
  - d) Fly
77. What are the flying mammals known as?
  - a) Arboreal
  - b) Fossorial
  - c) Volent
  - d) Terrestrial
78. Harmoerythric is common in which animals?
  - a) Protozoans
  - b) Annelids
  - c) Cat
  - d) Rat
79. Which is the insect usually read in genetic studies?
  - a) Fly
  - b) Bug
  - c) Fruitfly
  - d) Protozoa

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69. D	70. D	71. B	72. C	73. A	74. C
75. A	76. C	77. C	78. B	79. C	

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80. What is the praying mantis?  
 a) An insect feeding on other insects  
 b) A bug  
 c) Lice  
 d) Invertebrates
81. Which insect produces lac?  
 a) Larva  
 b) Silkworm  
 c) Lac Insect  
 d) Bee
82. What do we call the order of mammals that have hands and nails instead of claws?  
 a) Protozoa  
 b) Primates  
 c) *Homo sapiens*  
 d) None of the above
83. What is the generic name of anteaters?  
 a) Macaca  
 b) Echidna  
 c) Loros  
 d) Pteropus
84. Flying foxes are not foxes. Then what are they?  
 a) Mammals  
 b) Fishes  
 c) Birds  
 d) None of the above
85. Mammals are \_\_\_\_\_ blooded animals.  
 a) Cold  
 b) Warm  
 c) Medium  
 d) Very warm
86. Which bird is known as the laughing jackass?  
 a) Crow  
 b) Kookaburra  
 c) Dove  
 d) Parrot
87. Why is the female spider known as a black widow?  
 a) Males are rare  
 b) Males die fast  
 c) Males are smaller than the females  
 d) Female spider eats the male spider with whom it mates
88. Which of the following organism has no blood but respire?  
 a) fish  
 b) hydra  
 c) cockroach  
 d) earthworm
89. How long does a pearl in an oyster take to grow?  
 a) 15 to 20 years  
 b) 10 to 12 years  
 c) 1 to 2 years  
 d) One week
90. Where can you see white bear?  
 a) North pole  
 b) South pole  
 c) Siberia  
 d) Poland

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80. A	81. C	82. B	83. B	84. A	85. B
86. B	87. D	88. B	89. A	90. C	

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91. B    92. C    93. A    94. A    95. B    96. D  
97. B    98. A    99. A    100. C    101. C    102. C

114. Which insect will live even if its head is cut off?  
a) Grasshopper                      b) Cockroach  
c) Lizard                              d) None of the above
115. Which of the following is related to the digestive system?  
a) Prostate                            b) Platelets  
c) Pituitary                           d) Pancreas
116. How many bones are there in the trunk of an elephant?  
a) Nil                                    b) 10  
c) 12                                    d) 17
117. Which animal never dies even if its brain is removed?  
a) White tiger                        b) Bengal tiger  
c) Tortoise                            d) None of the above
118. What is a sponge?  
a) Bird                                  b) Animal  
c) Plant                                d) None of the above
119. Which animal is called as the American Lion?  
a) Canada Lion                       b) Puma  
c) Gir forest lion                    d) None of the above
120. Which bird has a very small tongue?  
a) Hummingbird                    b) Flamingo  
c) Kannat                             d) None of the above
121. Which bird has very long wings?  
a) Phonxipowl                       b) Prutle  
c) Cormorant                        d) None of the above
122. Which bird feeds on blood?  
a) Hummingbird                    b) American vampire  
c) Vampire                           d) Roadrunner
123. Which bird has a lot of colours on its body?  
a) Parrot                                b) Australian Parrot  
c) Pistarna                            d) None of the above
124. The largest known vertebrate is  
a) Whale                                b) Elephant  
c) Camel                                d) Lion
125. Which animal has the biggest heart?  
a) Tiger                                b) Elephant  
c) Blue Whale                        d) None of the above
- 

114. B	115. D	116. A	117. C	118. B	119. B
120. C	121. A	122. B	123. C	124. A	125. C

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126. Which animal has got a capacity to make a long jump?  
 a) Kangaroo                      b) Lion  
 c) Cheetah                        d) Deer
127. Animals with a pouch to carry their young ones:  
 a) Marsupials                    b) Mammals  
 c) Microbes                      d) Parasites
128. Which animal does not sweat at all?  
 a) Rat                              b) Bull  
 c) Tortoise                        d) Elephant
129. Which animal has a very powerful eyesight?  
 a) Lion                             b) Camel  
 c) Elephant                       d) Monkey
130. Which of the following shows a taxonomically closely related group?  
 a) earthworm, ringworm, tapeworm  
 b) silverfish, cuttlefish, starfish  
 c) housefly, dragonfly, butterfly  
 d) sea horse, sea anemone, sea urchin
131. The largest known invertebrate is  
 a) giant squid                    b) water flea  
 c) starfish                         d) sea-jelly
132. Who corroborated Darwin's theory of natural selection?  
 a) Wallace                        b) B.C. Roy  
 c) Salim Ali                       d) None of the above
133. Who is a Hippiatrist?  
 a) Treats diseases of horses  
 b) Fond of angling  
 c) Study of snakes  
 d) None of the above
134. In which country can you see the smallest fish?  
 a) Philippines                    b) Scotland  
 c) Ireland                         d) None of the above
135. Who has compiled a dictionary of the horse language?  
 a) Henry Blake                   b) Samuel Johnson  
 c) Elizabeth Paul                d) None of the above

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126. A	127. A	128. A	129. C	130. A	131. A
132. A	133. A	134. A	135. A		

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- 160.** The hormone which regulates the basal metabolism in our body is secreted from
- a) Pituitary                      b) Thyroid  
c) Adrenal cortex                d) pancreas
- 161.** The egg secretes this substance to attract sperms towards it
- a) Antifertilizin                  b) Fertilizin  
c) Hyaluronic acid                d) Hyaluronidase
- 162.** The natural wax and lac are obtained as
- a) petroleum products            b) resins of forest plants  
c) byproducts of sugar industry  
d) insect secretions
- 163.** Which is the largest animal in the world?
- a) Blue whale                      b) Rhinoceros  
c) Hippopotamus                  d) Elephant
- 164.** Match List-I (Blood arteries) with List-II (Organs) and select the correct answer by using the codes given below the lists:

**List -I**

- A) Left common carotid  
B) Left subclavian  
C) Coeliac  
D) Renal

**List-II**

- 1) Upper limb
- 2) Stomach
- 3) Kidneys
- 4) Head

**Codes:**

	A	B	C	D
a)	1	4	3	2
b)	4	1	3	2
c)	1	4	2	3
d)	4	1	2	3

- 165. A clone is produced**
- a) asexually from a single sexually produced ancestor.
  - b) sexually from single asexually produced ancestor.
  - c) by artificial insemination from a single sexually produced ancestor.
  - d) in vitro from a single sexually produced ancestor.
- 166. The type of aminoacids that the human body can synthesize is known as**
- a) essential aminoacids
  - b) non-essential aminoacids
  - c) synthetic aminoacids
  - d) naturally occurring aminoacids

160. B    161. B    162. D    163. A    164. D    165. A  
166. B



- 167. Match List-I (Glands) with List-II (Hormones secreted by the glands) and select the correct answer by using the codes given below the lists:**

List-I	List-II
A) Adrenal medulla	1) Insulin
B) Pancreas	2) Adrenocortico-trophic hormone
C) Ovary	3) Epinephrine
D) Pituitary	4) Progesterone

**Codes:**

	A	B	C	D
a)	3	1	2	4
b)	3	1	4	2
c)	1	3	4	2
d)	1	3	2	4

- 168. Match List-I (Cranial nerves in man) with List-II (Function) and select the correct answer by using the codes given below the lists:**

List-I	List-II
A) Trigeminal	1) Movement and secretion
B) Vagus	2) Hearing and equilibrium
C) Auditory	3) Touch and taste
D) Olfactory	4) Smell

**Codes:**

	A	B	C	D
a)	3	1	2	4
b)	2	1	3	4
c)	3	2	4	1
d)	1	2	3	4

- 169. What has been the correct sequence of the given processes in the cloning of the sheep 'Dolly'?**

- I. Nuclear transfer.
- II. Implantation of developing embryo in surrogate mother.
- III. Removal of nucleus from udder.
- IV. Electric simulation of the cell.

**Select the correct answer using the codes given below:**

- |                   |                   |
|-------------------|-------------------|
| a) III, I, II, IV | b) I, III, II, IV |
| c) I, III, IV, II | d) III, I, IV, II |

167. B    168. A    169. D

178. An ecosystem consists of  
 a) a living community and its environment.  
 b) all the plants and animals of an area.  
 c) carnivores and herbivores of an area.  
 d) producers, consumers and decomposers in a particular locality
179. In *Bonellia*, a marine worm, the male develops from a larva which  
 a) settles in a canal of sponges.  
 b) attaches to the uterus of female.  
 c) settles in the long proboscis of female.  
 d) secretes a chemical substance.
180. Spermatids derive the nourishment from  
 a) nucleus  
 b) cytoplasm  
 c) ciliated epithelial cell  
 d) sertoli cell
181. Which of the following is correctly matched?  
 a) Helps breathing - Stomach  
 b) Stores in R.B.C - Spleen  
 c) Stores glycogen - Diaphragm  
 d) Protein digestion - Liver
182. Match List-I with List-II and select the correct answer using the codes given below:

- List-I**  
 A) Crow  
 B) Parrot  
 C) Cuckoo  
 D) Sparrow

- List-II**  
 1) Culculidae  
 2) Corvidae  
 3) Ploceidae  
 4) Psittacidae

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 2 | 4 | 1 | 3 |
| b) | 2 | 4 | 3 | 1 |
| c) | 4 | 2 | 1 | 3 |
| d) | 2 | 1 | 3 | 4 |

183. Which of the following is correctly matched?  
 a) Coelo blastula - Bilateral symmetry  
 b) Disco blastula - Pig embryo  
 c) Placenta - Extra embryonic membrane  
 d) Epiboly - Movement of cells during gastrula formation

178. D    179. C    180. C    181. B    182. A    183. D

**184. Consider the following statements:**

**Assertion (A) :** A better treatment for loss of kidney function is transplant rather than dialysis.

**Reason (R) :** Dialysis cannot perform all the functions of the kidney.

**Of the statements:**

- a) Both (A) and (R) are correct
- b) (A) is correct, but (R) is incorrect
- c) (A) is incorrect, but (R) is correct
- d) Both (A) and (R) are incorrect

**185. How many bones are there in a human body?**

- a) 206
- b) 208
- c) 210
- d) 212

**186. A scientist kept 72 generations of *Drosophila* in darkness. Even after 72 generations, flies had normal eyes. This disapproves the theory of**

- a) natural selection
- b) sexual selection
- c) use and disuse
- d) artificial selection

**187. In the case of honey-bees, the queen lays a few eggs predestined to develop by parthenogenesis into**

- a) female drones
- b) successor queen
- c) male drones
- d) sterile bees

**188. Consider the following statements :**

**Assertion (A) :** Birds are glorified reptiles

**Reason (R) :** Birds have flight muscles

**Now select your answer according to the coding scheme given below:**

- a) Both (A) and (R) are true and (R) is the correct explanation of (A)
- b) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- c) (A) is true, but (R) is false
- d) (A) is false, but (R) is true

**189. It appears that man's closest living relatives are the**

- a) Anthropoid apes
- b) Old World monkeys
- c) New World monkeys
- d) None of these

---

184. B    185. A    186. C    187. D    188. B    189. A

---

**190. Match List I with List II correctly and select your answer:**

List I				List II			
A)	Annelida			1)	Pseudocoelom		
B)	Nematoda			2)	Nematocyst		
C)	Porifera			3)	Segmented body		
D)	Coelenterata			4)	Intracellular		

	A	B	C	D
a)	1	3	4	2
b)	3	1	4	2
c)	4	2	3	1
d)	2	4	1	3

**191. The largest living animals belong to the group**

- |             |            |
|-------------|------------|
| a) birds    | b) fishes  |
| c) reptiles | d) mammals |

**192. Maggot is the larva of**

- |             |              |
|-------------|--------------|
| a) Mosquito | b) Cockroach |
| c) Housefly | d) Butterfly |

**193. Archaeopteryx is a connecting link of the following animals:**

- |                          |                            |
|--------------------------|----------------------------|
| a) Pisces and Amphibians | b) Amphibians and Reptiles |
| c) Reptiles and Aves     | d) Aves and Mammals        |

**194. Arthropods are special animals as they**

- |                          |                        |
|--------------------------|------------------------|
| a) have haemocoel        | b) have segmented body |
| c) have colourless blood | d) do not have cilia   |

**195. If an amoeba is placed in salt water, its contractile vacuole will**

- |             |              |
|-------------|--------------|
| a) enlarge  | b) burst     |
| c) multiply | d) disappear |

**196. Match List I correctly with List II and select your answer:**

List I				List II			
A)	Lungfish			1)	Sphenodon		
B)	Flying reptile			2)	Protopterus		
C)	Living fossil			3)	Porpoise		
D)	Aquatic mammal			4)	Dracovolans		

	A	B	C	D
a)	3	1	2	4
b)	2	4	1	3
c)	1	3	4	2
d)	4	2	3	1

---

190. B    191. D    192. C    193. D    194. C    195. A  
196. B

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293. B    294. B    295. C    296. C    297. C    298. C  
299. A    300. D    301. A    302. C    303. B

- 304.** The type of cell division that occurs during gametogenesis
- a) Mitosis                      b) Amitosis  
c) Homogametic division    d) Meiosis
- 305.** The union of egg and sperm is called as
- a) Fertilization                b) Amphimixis  
c) Protoplasmic fusion        d) Lysis
- 306.** Which of the following is known as "green house gas"?
- a) Methane                      b) Oxygen  
c) Ethane                        d) Propane
- 307.** Smoke combines with droplets of water to form
- a) Fog                             b) Smog  
c) Soot                          d) Water vapour
- 308.** The natural history of a disease include two phases as
- a) Prepathogenesis and pathogenesis  
b) Incubation and infection    c) Contamination and contact  
d) None of the above
- 309.** Inoculation of vaccines to prevent diseases is
- a) Prepathogenesis              b) Hibernation  
c) Incubation                    d) Immunisation
- 310.** The vaccine given to new born child is
- a) BCG                          b) MMR  
c) DT                             d) TT
- 311.** Of the following, which one is the biological agent of communicable disease?
- a) mycoplasma                    b) fat  
c) urea                            d) heat
- 312.** The disease and infections which are naturally transmitted between vertebrate animal and man are
- a) Communicable diseases    b) Non-communicable diseases  
c) Contact diseases            d) Zoonoses
- 313.** Whooping cough is transmitted by
- a) Direct contact                b) Droplet infection  
c) Bite of animal                d) None of the above
- 314.** Diseases spread by articles like cups and spoons are
- a) Air borne diseases            b) Vehicle borne  
c) Dust borne                    d) Formite borne diseases

304. D   305. A   306. A   307. B   308. A   309. D  
310. D   311. A   312. D   313. B   314. D

**315. Prophylaxis means**

- a) Breaking the routes of transfer of diseases
- b) Preventive treatment against diseases
- c) Immunization
- d) Non - specific measures

**316. The bacteria that cause cholera are**

- a) Bacillus
- b) Spirillum
- c) Vibrio
- d) Coccus

**317. The vector tht transmits cholera is**

- a) House fly
- b) Mosquito
- c) Cockroach
- d) Fruit fly

**318. Antifertilizin is secreted by**

- a) egg
- b) zygote
- c) sperm
- d) follicle cells

**319. The incubation period of typhoid bacteria is**

- a) 7-14days
- b) 10-14 days
- c) 9-14 days
- d) 2-7 days

**320. "Hepatitis" means**

- a) stomach ailment
- b) lung ailment
- c) liver ailment
- d) kidney ailment

**321. The symptoms of measles are**

- a) fever, cough, sneezing and redness of eyes
- b) eruption of small red spots
- c) inflammation of mucous membrane of the nose
- d) all of the above

**322. The effective live vaccine available for the control of mumps is**

- a) BCG
- b) MMR
- c) DPT
- d) DT

**323. Robert Koch discovered**

- a) Tetanus bacterium
- b) Diphtheria bacterium
- c) Mycobacterium tuberculosis
- d) None of the above

**324. The painful swelling in either one or both of the parotid gland is due to**

- a) Tetanus
- b) Mumps
- c) Measles
- d) Chicken pox

**325. An example for bacterial zoonoses is**

- a) Taeniasis
- b) Trypanosomiasis
- c) Plague
- d) Mycotic disease

---

315. B	316. C	317. A	318. C	319. B	320. C
321. A	322. B	323. C	324. B	325. C	

---

- 326. The membrane that prevents polyspermy is**  
 a) fertilization membrane      b) egg membrane  
 c) vitelline membrane      d) zona radiata
- 327. Malaria is spread by**  
 a) Air      b) Female Anopheles mosquito  
 c) Culex      d) Male Anopheles mosquito
- 328. The transformation of blastula into gastrula is**  
 a) Emboly      b) Epiboly  
 c) Blastulation      d) Gastrulation
- 329. Hydrophobia is**  
 a) like for water      b) dislike for water  
 c) vomiting      d) stiffness
- 330. The type of reproduction seen in paramecia is**  
 a) Sexual reproduction      b) Conjugation  
 c) Asexual reproduction      d) Vegetative reproduction
- 331. Hansen's disease is**  
 a) Tuberculosis      b) Leprosy  
 c) Plague      d) Tetanus
- 332. The method of sex determination in Drosophila is**  
 a) ZW - ZZ      b) XX - XY  
 c) ZZ - ZW      d) XX - ZO
- 333. Gonorrhea can be cured with**  
 a) Rifampicin      b) Penicillin  
 c) Antitoxin      d) Biocillin
- 334. The multidrug treatment against leprosy includes**  
 a) Rifampicin      b) Penicillin  
 c) Antitoxin      d) Biocillin
- 335. Which one of the following is a sexually transmitted disease?**  
 a) Leprosy      b) Syphilis  
 c) Tuberculosis      d) Tetanus
- 336. Physical dependence is the result of**  
 a) Alcoholism      b) AIDS  
 c) Drugs      d) Polygamy
- 337. The main cause for stroke is**  
 a) Diabetes      b) Increased blood pressure  
 c) Obesity      d) Smoking

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326. A	327. B	328. D	329. B	330. B	331. B
332. B	333. B	334. A	335. B	336. A	337. B

---

338. C H D is

- a) a disease in liver                      b) a type of cancer  
c) a heart disease                      d) none of the above

339. A cockroach has

- a) three pairs of walking legs      b) two pairs of walking legs  
c) four pairs of walking legs      d) one pair of walking legs

340. Match the following:

List I

- A) Bat  
B) Amoeba  
C) Lizard  
D) Insect

List II

- 1) Reptile  
2) Mammalia  
3) Arthropod  
4) Protozoan

Codes:

	A	B	C	D
a)	2	3	4	1
b)	2	4	1	3
c)	4	2	3	1
d)	1	4	2	3

341. To which animal phyla do the organisms with round bodies marked externally into rings or segments belong?

- a) Porifera                      b) Annelida  
c) Coelenterata              d) none of these

342. Insects belong to

- a) Annelida                      b) Arthropoda  
c) Crustaceans              d) Coelenterata

343. Which of the following pairs of organisms represents host-parasite relationship?

- a) Tiger and deer              b) Man and lice  
c) Man and elephant          d) Pea-plant and Rhizohium

344. What is the main function of the tail of a bird?

- a) To help the bird to float in air  
b) To balance the body  
c) To generate speed during flying  
d) To control direction during flying

345. With the help of which organ cockroach respirates?

- a) Nasal aperture              b) Lung  
c) Spiracles                      d) Gills

338. C	339. A	340. B	341. B	342. B	343. B
344. D	345. C				



346. The only anthropoid ape to be found in India is the  
 a) hanuman monkey  
 b) lion-tailed macaque of Western Ghats  
 c) slow loris of Assam  
 d) white-browed gibbon of Assam
347. The insect not useful to man is  
 a) rice weevil  
 b) honeybee  
 c) silkworm  
 d) lac insect
348. Which one of the following groups of organisms possesses exoskeleton?  
 a) Arthropoda  
 b) Molluscs  
 c) Coelenterates  
 d) Fishes
349. Which of the following organisms can regenerate when cut into pieces and become whole animal?  
 I) Snail  
 II) Sponge  
 III) Hydra  
 IV) Millipede  
 Choose the correct answer from the codes given below:  
 a) I and II only  
 b) III and IV only  
 c) II and III only  
 d) II and IV only
350. In mammals the part of brain that has reached highest level of development and thus has enabled humans to grow their own crop, invent machines, develop language and art is  
 a) Cerebrum  
 b) Cerebellum  
 c) Medulla oblongata  
 d) None of the above
351. The only snake that builds a nest is  
 a) Chain viper  
 b) King Cobra  
 c) Krait  
 d) Saw-scaled viper
352. What is the main function of the tail of a bird?  
 a) To help the bird to float in air  
 b) To balance the body  
 c) To generate speed during flying  
 d) To control direction during flying
353. Which most vital system is absent in tapeworm?  
 a) Digestive  
 b) Nervous  
 c) Excretory  
 d) Reproductive

---

346. D    347. A    348. A    349. C    350. A    351. D  
 352. D    353. A

---

- 368. What is the scientific name of Java Man?**

- 369. Match List-I with List-II and select the correct answer by using the codes given below the lists:**

**List -I (Joints)**

- A) Ball and socket  
B) Hinge  
C) Pivot  
D) Fixed

**List-II (Location)**

- 1) Elbow
- 2) Shoulder
- 3) Neck
- 4) Skull

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 2 | 1 | 4 | 3 |
| c) | 2 | 1 | 3 | 4 |
| d) | 1 | 2 | 4 | 3 |

- 370. In honeybee, drones are produced by**

- a) Unfertilized eggs      b) Fertilized eggs  
c) Low fed larvae      d) Larva fed with royal jelly

- 371. Order of lac insect is**

- a) Hymenoptera      b) Lepidoptera  
c) Homoptera        d) Diptera

- 372. Haemozoin is a toxic substance formed in case of malaria. It is produced by**

- a) Globin protein of RBC  
b) Colour pigment of RBC  
c) Dead WBC  
d) Cryptozoites

- 373. Which disease is caused by female Culex?**

- a) Malaria  
b) Pneumonia  
c) Typhoid  
d) Filaria

- 374. Which disease is caused by activation of oncogenes?**

- a) Cholera                      b) Cancer  
c) T.B.                         d) Viral flu

367. B   368. A   369. C   370. A   371. C   372. B  
373. D   374. B

375. Spread of cancerous cells to distant sites is termed as  
 a) Metastasis                      b) Oncogenes  
 c) Proto-oncogenes              d) Malignant neoplasm
376. AIDS causing factors are associated with  
 a) RNA virus                      b) DNA virus  
 c) Bacteria                      d) protozoa
377. Smoking addiction is harmful because it produces polycyclic aromatic hydrocarbons, which cause  
 a) Reduction in oxygen transport  
 b) Increase in blood pressure  
 c) Cancer  
 d) Retardation of growth of foetus
378. Alcohol addiction is harmful because it causes  
 a) Protein deposition in liver  
 b) Deposition of extra fat in liver  
 c) Rise in blood sugar level  
 d) Cancer
379. Striped muscles are present in  
 a) Lungs                      b) Gall bladder  
 c) Blood vessels              d) Limb muscles
380. The stored food material found in muscles is  
 a) Protein                      b) Glycogen  
 c) Lipid                      d) Phosphogen
381. Striped muscles are  
 a) Syncytial                      b) Uninucleate  
 c) Binucleate                      d) Anucleate
382. The main function of tendon is  
 a) To join two bones              b) To join two muscles  
 c) To join muscles and bones  
 d) To join muscles and nerve
383. Nails are formed by  
 a) Bones                      b) Chitin  
 c) Cartilage                      d) Keratin
384. Lymph is colourless because  
 a) WBC are absent              b) WBC are present  
 c) Haemoglobin is absent      d) RBC are absent

---

375. A    376. B    377. C    378. D    379. D    380. B  
 381. A    382. C    383. D    384. D

---

- 385. Lymph (nodes) glands form**  
 a) Hormones                      b) Lymphs  
 c) Antigens                      d) Antibodies
- 386. In nephrons there is complete absorption of**  
 a) Urea                              b) Salt  
 c) Glucose                        d) Water
- 387. Main function of cerebellum is**  
 a) Balancing                      b) To see  
 c) To Hear                        d) Remembering
- 388. The centre for sense of smell in brain is**  
 a) Cerebellum                      b) Cerebrum  
 c) Olfactory lobes                d) Midbrain
- 389. The nerve related with diaphragm is**  
 a) Vagus                            b) Phrenic  
 c) Trigeminal                      d) Glossopharyngeal
- 390. The largest cranial nerve is**  
 a) Vagus                            b) Olfactory  
 c) Hypoglossal                      d) Glossopharyngeal
- 391. Ear drum is known as**  
 a) Tympanic membrane            b) Tensor tympani  
 c) Scala-tympani                      d) Scala vestibuli
- 392. Function of lachrymal glands is**  
 a) To secrete mucous                b) To secrete tears  
 c) To secrete oil                      d) To secrete fat
- 393. Movement in sperm is by**  
 a) Head                              b) Acrosome  
 c) Middle piece                      d) Tail
- 394. Sperm head contains**  
 a) Nucleus                            b) Golgi body  
 c) Centrosome                      d) Mitochondria
- 395. Fallopian tube is the part of**  
 a) Uterus                            b) Ureter  
 c) Oviduct                            d) Vas deferens
- 396. What is the function of amnion?**  
 a) Respiration                      b) Excretion  
 c) Nutrition                        d) Protection from shocks

385. D	386. C	387. A	388. C	389. B	390. A
391. A	392. B	393. D	394. A	395. C	396. D



418. In which book has Binomial Nomenclature been used for the first time?  
 a) *Histoire Naturelle*                      b) *Systema Naturae*  
 c) *Historia Naturalis*                      d) *Historia Plantarum*
419. What is the name of the book written by Aristotle?  
 a) *Historia Animalium*                      b) *Histoire Naturelle*  
 c) *Systema Naturae*                      d) *Philosophie Zoologique*
420. Who is the 'Father of Zoology'?  
 a) Aristotle                      b) Theophrastus  
 c) Lazzaro Spallanzani                      d) Carolus Linnaeus
421. Karyotaxonomy is the modern branch of classification which is based on  
 a) Number of chromosomes  
 b) Bands found on chromosomes  
 c) Organic Evolution                      d) Trinomial Nomenclature
422. In which Phylum is Water Vascular System found?  
 a) Protozoa                      b) Arthropoda  
 c) Porifera                      d) Echinodermata
423. The process by which ova are discharged from the ovary is known as  
 a) Oviparity                      b) Ovulation  
 c) Oviposition                      d) Ovoviviparity
424. Graafian follicle is characteristic of  
 a) Amphibian ovary                      b) Mammalian ovary  
 c) Amphibian testis                      d) Mammalian testis
425. In our body, the blood bank is  
 a) Red bone marrow                      b) Spleen  
 c) Liver                      d) Heart
426. Cell division in sexual reproduction is  
 a) Amitotic                      b) Mitotic  
 c) Meiotic                      d) Both meiotic and mitotic
427. Animals living in dry conditions, such as most insects, land reptiles (snakes and lizards), birds have to conserve water in their bodies. These, therefore, synthesize nontoxic metabolic excretory product  
 a) Uric acid                      b) Hippuric acid  
 c) Amino acids                      d) Urea

---

418. B	419. A	420. A	421. A	422. D	423. B
424. B	425. B	426. C	427. A		

---



- 443. The compound eye of insect produces**  
a) Binocular vision                      b) Monocular vision  
c) Mosaic vision                         d) None of these
- 444. The post-embryonic stages in the life history of cockroach is known as**  
a) Caterpillar                              b) Grubs  
c) Larval                                    d) Nymphs
- 445. Which of the following control the reflex action in the body?**  
a) Central nervous system    b) Motor nerves  
c) Sensory nerves                      d) Sympathetic nervous system
- 446. DNA model was given by**  
a) Beadle and Tatum                      b) Fisher and Haldane  
c) Lederberg and Tatum                d) Watson and Crick
- 447. The theory of inheritance of acquired characters was propounded by**  
a) Charles Darwin                      b) Gregor Mendel  
c) J.B. Lamarck                          d) Weismann
- 448. Incomplete 'ecosystems' where only 'consumer' and 'decomposers' exist are exemplified by**  
a) Caves and central core of metropolises  
b) Abyssal depth of sea and caves  
c) Abyssal depth of sea, caves and central core of metropolises  
d) Abyssal depth of sea and central core of metropolises
- 449. Among the aquatic mammals, whales can remain under water for extended periods of time without having to come to the surface of air, because**  
a) They can store oxygen in their blood plasma  
b) The metabolic rate can be lowered to reduce demand for oxygen in them  
c) They possess a specialised vascular structure that facilitates storage of oxygen  
d) The lung volume can be increased to permit larger intake of air every time the whale comes to the surface of air
- 450. For effective use in biological control of pests, an insect must not possess**  
a) High fecundity                         b) High searching power  
c) Extended life cycle                    d) Specificity in habit

---

443. C    444. D    445. A    446. D    447. D    448. B  
449. C    450. B

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451. The centre for regulation of food intake in man is located in the  
 a) Cerebral Cortex                      b) Medulla  
 c) Cerebellum                            d) Hypothalamus
452. Which one of the following secretes a broad spectrum of digestive enzymes?  
 a) Salivary glands                      b) Gastric glands  
 c) Pancreas                                d) Intestinal glands
453. Analogous organs are similar in  
 a) Behaviour                                b) Function  
 c) Origin                                      d) Behaviour and origin
454. Prothrombin which helps in clotting of blood is released by  
 a) Lymphocytes                          b) Erythrocytes  
 c) Monocytes                              d) Blood platelets
455. Epiglottis helps in preventing  
 a) Food from entering the larynx  
 b) Air from entering the larynx  
 c) Air from entering the oesophagus  
 d) Food from entering the oesophagus
456. Placenta is the structure formed  
 a) By the union of foetal and uterine tissue  
 b) By foetus only                      c) By fusion of germ layers  
 d) None of these
457. The chief function of semi-circular canal in the internal ear is to  
 a) Interpret impulses as sound  
 b) Maintain equilibrium of the body  
 c) Transmit sound vibrations to auditory nerve  
 d) Transmit vibrations of tympanic membrane
458. The mouth parts of Anopheles are adapted to  
 a) Chewing type feeding  
 b) Piercing and sucking type feeding  
 c) Biting and chewing type feeding  
 d) Sucking type feeding
459. The life history of human malarial parasite in Anopheles was first described by  
 a) Grassi and his pupils              b) Sir Patrick Manson  
 c) Sir Ronald Ross                      d) Richard Pfeinner

---

451. D    452. D    453. B    454. D    455. A    456. A  
 457. B    458. B    459. C

---

- 460. Enzymes differ from ordinary catalysts in**  
 a) That they are non-proteins  
 b) That they are produced outside the living cells  
 c) That they are proteins  
 d) None of these
- 461. Which of the following situations will be fatal to the first foetus?**  
 a) Rh positive male marries Rh positive woman  
 b) Rh positive male marries Rh negative woman  
 c) Rh negative male marries Rh positive woman  
 d) Rh negative male marries Rh negative woman
- 462. Which one of the following is a 'pinworm'?**  
 a) Ankyclostoma                      b) Wucheria  
 c) Ascaris                                d) Oxyuris
- 463. Which one of the following reptiles has four-chambered heart?**  
 a) Snake                                  b) Turtle  
 c) Crocodile                              d) Lizard
- 464. Organisms at the base of the food chain are**  
 a) Photosynthetic plants    b) Herbivores  
 c) Carnivores                            d) Decomposers
- 465. Suppose in a balanced green forest, the number of tigers was doubled. This would gradually**  
 a) increase primary carnivores  
 b) increase the biomass of herbivores  
 c) decrease the biomass of herbivores  
 d) decrease the biomass of producers
- 466. If the fins of a fish are damaged, which of the following activities would suffer?**  
 a) Speed and respiration  
 b) Speed and changing direction  
 c) Locomotion and excretion  
 d) Locomotion and respiration
- 467. The insects which are highly destructive to building and wooden structures are**  
 a) Weevils                                b) Cockroach and Ants  
 c) Corn-borer                            d) Termites

---

460. D    461. B    462. C    463. C    464. A    465. C  
 466. B    467. D

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468. The epidermis is made up of four distinct layers of epithelial cells. From the innermost to the outermost position, the correct sequence of these layers is
- Malpighian, Granulosum, Lucidum, Corneum
  - Corneum, Granulosum, Lucidum, Malpighian
  - Granulosum, Lucidum, Malpighian, Corneum
  - Lucidum, Corneum, Malpighian, Granulosum
469. From which stage of silk moth is silk obtained?
- Pupa
  - Adult
  - Cocoons
  - Caterpillar
470. Sleeping sickness is transmitted from one host to another by the vector known as
- Culex Fatigans*
  - Glossina Morsitans*
  - Glossina Palpalis*
  - Trypanosoma gambiense*
471. The dermis has skin pigment cells called
- Dendrites
  - Erythrocytes
  - Melanocytes
  - Monocytes
472. The lowermost layer of epithelial cells of the epidermis is called
- Corneum
  - Granulosum
  - Lucidum
  - Malpighian
473. Of how many distinct layers of epithelial cells is epidermis made up of?
- 2
  - 3
  - 4
  - 5
474. Animals do not have enzyme systems which enable them to make use of the energy from
- Fat
  - Water
  - Protein
  - Carbohydrates
475. A clone is a colony of
- Cells having different shapes
  - Cells having similar shapes
  - Cells having similar genetic constitutions
  - Cells having different genetic constitutions
476. What does make the blood look red?
- Red corpuscles
  - Haemoglobin
  - Plasma
  - Certain secretions

---

468. A    469. C    470. C    471. C    472. D    473. C  
 474. C    475. C    476. B

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- One of the characteristics that differentiates procaryotes from eucaryotes is
  - RNA
  - DNA
  - Protein
  - Membrane-bound organelles
- Match List I with List II correctly and select your answer using the codes given below:

### List I (Pathogens)

- Entamoeba histolytica*
- Clostridium tetani*
- Bordetella pertussis*
- Wuchereria bancrofti*

### List II (Diseases)

- Whooping cough
- Amoebiasis
- Filariasis
- Tetanus

Codes:

	A	B	C	D
a)	2	4	1	3
b)	2	4	3	1
c)	4	2	1	3
d)	2	1	3	4

- Which of the following is correctly matched?
  - Helps in breathing - Stomach
  - Stores red blood cells - Spleen
  - Stores glycogen - Diaphragm
  - Protein digestion occurs here - Liver
- Oxytocin is secreted by
  - adrenal gland
  - pituitary gland
  - ovary
  - testis
- Which of the following is correctly matched?
  - Coeloblastula - Bilateral symmetry
  - Disco blastula - Pig embryo
  - Placenta - Extra-embryonic membrane
  - Epiboly - Movement of cells during embryo formation

Ans: 1. C    2. A    3. B    4. B    5. D



6. It is believed that life evolved in its early stage under oxygen-free condition. Which of the following organisms might have been able to survive in that environment?
  - a) Obligate anaerobic bacteria
  - b) Obligate halophytes
  - c) Lichens
  - d) Thermophilic algae
7. Spermatids derive the nourishment from
  - a) nucleus
  - b) cytoplasm
  - c) ciliated epithelial cell
  - d) Sertoli cell
8. Mitosis actually means
  - a) Division of cytoplasm only
  - b) Division of nucleus only
  - c) Reduction in number of chromosomes
  - d) Both nuclear and cytoplasmic divisions
9. Mitochondria will be found in abundance, where there is
  - a) A wound activity in the body
  - b) Maximum activity in the body
  - c) Least activity in the body
  - d) Average activity in the body
10. The shape of human immunodeficiency (HIV) virus is
  - a) Spherical in shape
  - b) Rod-like in shape
  - c) Spiral-like in shape
  - d) Comma-like in shape
11. Match List with List II correctly and select your answer using the codes given below:

**List I**

- A) Virus
- B) Bacteria
- C) Nucleus
- D) Cell

**List II**

1. Robert Hooke
2. Robert Brown
3. Dmitry Ivanowsky
4. Antonie van Leeuwenhoek

**Codes:**

	A	B	C	D
a)	3	4	2	1
b)	4	2	1	3
c)	1	2	3	4
d)	2	3	4	1

---

6. A    7. C    8. D    9. B    10. A    11. A

---

12. **Polyploidy is most common in**  
 a) Animal Kingdom                      b) Plant Kingdom  
 c) Fungi                                      d) Protista
13. **The process of transfer of desirable characters from one species to other is known as**  
 a) introduction                              b) selection  
 c) emasculation                              d) hybridization
14. **Mycotoxins are pollutants because they affect most commonly**  
 a) water    b) soil  
 c) food    d) air
15. **Nitrogen fixation is generally brought about by**  
 a) Bacteria                                      b) Bacteria and blue-green algae  
 c) Algae    d) Fungi
16. **Which one of the following is correctly matched?**  
 a) Primary Consumer                      - Locust  
 b) Secondary Consumer                      - Plants  
 c) Tertiary Consumer                      - Snake  
 d) Products                                      - Kite
17. **Which one of the following is correctly matched?**  
 a) Salivary gland                              - Gastric Juice  
 b) Liver    - Amylase  
 c) Pancreas                                      - Trypsinogen  
 d) Stomach                                      - Bile
18. **Which one of the following is correctly matched?**  
 a) Haemoglobin is found in                      - Calcium  
 b) Green-plants contain                      - Blood  
 c) The largest gland in human body is                      - Liver  
 d) The most abundantly found metal in the human body                      - Starch
19. **Which of the organelles given below is known as "the powerhouse" of the cell?**  
 a) Lysosome                                      b) Golgi body  
 c) Mitochondrion                              d) Ribosome
20. **The chromosome number is reduced to half during**  
 a) mitosis    b) meiosis  
 c) amitosis    d) apospory

---

12. D	13. A	14. B	15. A	16. A	17. C
18. C	19. C	20. B			

---

21. To which kingdom bacteria belong?
  - a) Plantae
  - b) Protista
  - c) Animalae
  - d) Monera
22. Which of the following micro-organisms are involved in nitrogen fixation?
  - I. Blue-green Algae
  - II. Azotobacter
  - III. Rhizobium
 Of the statements
  - a) II and III are correct
  - b) I and III are correct
  - c) I and II are correct
  - d) I, II and III are correct
23. The cytoplasm surrounding the mitochondria found in the middle piece of the sperm is called
  - a) acrosome
  - b) centrosome
  - c) microsome
  - d) manchette
24. The term "test-tube baby" refers to
  - a) a baby developed in a test-tube
  - b) an artificial baby developed in a test-tube
  - c) *in vitro* fertilization and embryo replacement
  - d) a baby developed from ovum without fertilization
25. Hyaluronidase is found in
  - a) the acrosome of mammalian sperm
  - b) the centrosome of mammalian ovum
  - c) the lysosome of ovum
  - d) the lysosome of sperm
26. The chromosome composition of man is
  - a) 44AA + XY
  - b) 44AA + XX
  - c) 22A + X
  - d) 22A + Y
27. Which one of the following is correctly matched?
  - a) Platyhelminthes - Sponge
  - b) Ciliophora - Paramecium
  - c) Sarcodina - Malarial parasite
  - d) Porifera - Tapeworm
28. Which one of the following is mismatched?
  - a) Salivary gland - An endocrine gland
  - b) Pancreas - Islets of Langerhans
  - c) Birds - Aves
  - d) Kidney - Ultrafiltration

21. D    22. A    23. B    24. C    25. A    26. A  
 27. B    28. A

29. An ecosystem has two components, namely
  - a) weeds and trees
  - b) biotic and abiotic
  - c) frogs and men
  - d) plants and animals
30. The genetic material of a cell resides in
  - a) cytoplasm
  - b) protoplasm
  - c) ribosome
  - d) DNA
31. Mutation theory was proposed by
  - a) Darwin
  - b) Morgan
  - c) Lamarck
  - d) Hugo de Vries
32. Development of a sporophyte directly from the sporophytic tissue is called
  - a) Double fertilization
  - b) Triple fusion
  - c) Apospory
  - d) Syngamy
33. Autotrophs in an ecosystem are called
  - a) producers
  - b) consumers
  - c) decomposers
  - d) abiotic constituents
34. Acromegaly is caused by irregular secretion of
  - a) Pituitary
  - b) Thyroid
  - c) Adrenal
  - d) Pancreas
35. The ABO bloodgroups were discovered by
  - a) Charles Darwin
  - b) Gregor Mendel
  - c) Karl Landsteiner
  - d) Waston
36. Identical twins are born, when
  - a) two sperms fertilize two ova
  - b) two sperms fertilize one ovum
  - c) one sperm fertilizes one ovum
  - d) one sperm fertilizes one ovum. Zygote cleaves into two cells that develop independently
37. The food which gives an athlete instant energy is
  - a) Glucose
  - b) Butter
  - c) Protein
  - d) Vitamin
38. DNA structure was first described by
  - a) Catcheside
  - b) Lederberg
  - c) Nirenberg
  - d) Watson and Crick

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46. Mark the correct statement:  
 a) All sperms fertilize all eggs  
 b) Eggs are fertilized by many sperms  
 c) Each egg is usually fertilized by one sperm  
 d) Each sperm fertilizes one egg.
47. Mark the correct statement:  
 a) Foramen magnum is in the skull  
 b) Foramen magnum is an aperture in the heart  
 c) Foramen magnum is a large hole in the voice box  
 d) Foramen magnum does not exist anywhere
48. Match List I correctly with List II and select your answer using the codes given below:
- | List I                          |  | List II              |  |
|---------------------------------|--|----------------------|--|
| A) <i>Trypanosoma gambiense</i> |  | 1) Malaria           |  |
| B) <i>Leishmania donovani</i>   |  | 2) Diarrhoea         |  |
| C) <i>Plasmodium ovale</i>      |  | 3) Sleeping sickness |  |
| D) <i>Trichomonas hominis</i>   |  | 4) Kala-azar         |  |
- Codes:
- | A    | B | C | D |
|------|---|---|---|
| a) 3 | 4 | 1 | 2 |
| b) 4 | 1 | 2 | 3 |
| c) 3 | 1 | 2 | 4 |
| d) 4 | 1 | 3 | 2 |
49. Which one of the following is correctly matched?  
 a) Charles Darwin - Theory of Parthenogenesis  
 b) Hugo de Vries - Cell theory  
 c) Lamarck - Theory of mutation  
 d) Spencer - Theory of inheritance of acquired character
50. 'Survival of the fittest' was proposed in his theory of evolution by  
 a) Darwin  
 b) Mendel  
 c) Lamarck  
 d) Hugo de Vries
51. This pteridophyte produces two kinds of spores.  
 a) Lycopodium  
 b) Selaginella  
 c) Psilotum  
 d) Adiantum

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46. C    47. B    48. A    49. A    50. A    51. B

---



52. A plant cell differs from an animal cell in the absence of  
 a) Mitochondria                      b) Centrioles  
 c) Ribosomes                          d) Endoplasmic reticulum
53. Which of the following is not a constituent of DNA molecule?  
 a) Adenine                              b) Cytosine  
 c) Thymine                             d) Uracil

54. Match List I with List II and select the correct answer using the codes given below:

**List I**

- a) Vitamin A  
 b) Vitamin B  
 c) Vitamin D  
 d) Vitamin E

**List II**

- 1) Antirachitic  
 2) Antisterilitic  
 3) Antixerophthalmic  
 4) Antineuritic

**Codes:**

	A	B	C	D
a)	3	4	1	2
b)	2	3	4	1
c)	4	2	3	1
d)	3	1	2	4

55. Match List I with List II and select the correct answer using the codes given below:

**List I**

- A) Free martins  
 B) Organisers  
 C) Rh - factor  
 D) Test-tube babies

**List II**

- 1) Spemann  
 2) Steptoe and Edwards  
 3) Lillie  
 4) Landsteiner and Wiener

**Codes:**

	A	B	C	D
a)	2	1	4	3
b)	3	2	1	4
c)	4	1	2	3
d)	3	1	4	2

56. Most of the red, blue and purple colours are due to a pigment called  
 a) Anthocyanin                      b) Carotene  
 c) Chlorophyll                        d) Xanthophyll

---

52. B    53. D    54. A    55. D    56. A

---



66. Organism that lives at the air-water interface is called

- a) Benthos                      b) Nekton  
c) Neuston                      d) Plankton

67. Match List I with List II and select the correct answer using the codes given below the lists:

**List I**

- A) Tsetse fly  
B) Aedes mosquito  
C) Water snail  
D) Sand-flies

**List II**

- 1) Yellow fever  
2) Sleeping sickness  
3) Kala-azar  
4) Biharzia

**Codes:**

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 4 | 3 |
| b) | 3 | 1 | 4 | 2 |
| c) | 2 | 1 | 4 | 3 |
| d) | 4 | 2 | 3 | 1 |

68. Which of the following human fossils was found in India?

- a) *Homo rudolfensis*                      b) *Australopithecus*  
c) *Homo erectus*                      d) *Homo habilis*

69. The most primitive molluscan is

- a) Chiton                      b) Neopilina  
c) Patella                      d) Unio

70. Mark the correct statements:

- a) Mammals have mammary glands, hairs, pinna, nails  
b) Mammals have mammary glands, pinna, pectan, hairs  
c) Mammals have mammary glands, pinna, hairs, diaphragm  
d) Mammals have mammary glands, teeth, pinna, sinus venosus

71. *Plasmodium vivax* causes

- a) Quartan fever                      b) Benign fever  
c) Malignant malaria                      d) Mild malaria

72. Which are the two bones that participate in the ball and socket joint of the forelimb in man?

- a) Clavicle and Scapula                      b) Ulna and Clavicle  
c) Humerus and Scapula                      d) Humerus and Clavicle

- 
- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 66. B | 67. C | 68. B | 69. A | 70. D | 71. D |
| 72. C |       |       |       |       |       |
-

73. Mark the correct statement:

- a) The central cavity of Hydra is centrocoel
- b) The central cavity of Hydra is gastrocoel
- c) The central cavity of Hydra is coelenteron
- d) The central cavity of Hydra is gastrovascular cavity

74. Match List I with List II and select the correct answer using the codes given below the lists

List I

List II

- |                    |                                      |
|--------------------|--------------------------------------|
| A) Vegetal pole    | 1) cell of blastula                  |
| B) Blastomere      | 2) Development without fertilization |
| C) Parthenogenesis | 3) Echinoderm egg                    |
| D) Janus green     | 4) Yolk                              |

Codes:

- |    | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 3 | 2 | 4 |
| b) | 1 | 2 | 4 | 3 |
| c) | 1 | 2 | 3 | 4 |
| d) | 1 | 3 | 4 | 2 |

75. What is the correct sequence of the lifecycle of fern?

- a) Spore - sporophyte - gamete - gametophyte
- b) Zygote - gametophyte - sporophyte - spore
- c) Zygote - gametophyte - spore - sporophyte
- d) Zygote - sporophyte - spore - gametophyte

76. Identify the correct sequence of the pace-making system in human heart.

- a) A.V. node - S.A. node - Purkinji system - Bundle of His
- b) A.V. node - S.A. node - Bundle of His - Purkinji system
- c) S.A. node - A.V. node - Bundle of His - Purkinji system
- d) S.A. node - A.V. node - Purkinji system - Bundle of His

77. Consider the following statements:

**Assertion (A)** : In man urine is filtered in malpighian capsule

**Reason (R)** : Colloidal osmotic pressure of blood protein is responsible for urine filtration

Now select your answer according to the codes given below:

- a) Both A & R are true, and R is the correct explanation of A
- b) Both A & R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

73. A    74. C    75. D    76. D    77. D

78. Consider the following statements:

- I. Haemoglobin is a blood pigment of vertebrates
- II. Haemoglobin is an oxygen carrier
- III. Haemoglobin is a carbohydrate
- IV. Haemoglobin is blue in colour

Of the statements:

- a) I alone is correct
- b) I and II are correct
- c) I, II and III are correct
- d) All are correct

79. Consider the statements:

- I. Viruses are obligatory endoparasites of living cells
- II. Viruses have genetic material
- III. Viruses can be crystallized
- IV. Viruses do not have mitochondria

Of the statements:

- a) I alone is correct
- b) I and II are correct
- c) I, II and III are correct
- d) All are correct

80. Match List I with List II and select the correct answer using the codes given below the lists:

List I				List II			
A) Sex-linked inheritance				1) Brachyphalangy			
B) Lethal genes				2) Turner Syndrome			
C) Aneuploidy				3) Alkaptonuria			
D) Mutation				4) Colour blindness			

	A	B	C	D
a) 3	4	1	2	
b) 3	2	1	4	
c) 4	1	2	3	
d) 4	2	3	1	

81. Which one of the following is correctly matched?

- a) Producer - Deer
- b) Primary consumer - Leopard
- c) Secondary consumer - Grass
- d) Decomposer - Bacteria

82. The total organic matter present in an ecosystem is referred to as the

- a) Biomass
- b) Biosphere
- c) Biome
- d) Biocoenosis

78. B    79. C    80. C    81. D    82. C







103. In mammals, the skin performs all of the following functions, except
- Accessory respiratory function
  - Produces vitamin D (essential for the formation of bones and teeth) in the presence of sunlight
  - Sensory function
  - Thermo-regulatory function
104. Which of the following statements in regard to the cell theory is not correct?
- Cells arise only from pre-existing cells
  - Majority of organisms are composed of cells and cell products
  - Cells are the structural and functional units of life
  - All these statements are correct
105. Which of the following statements in regard to cells and atoms is not true?
- Both cell and atom are composed of simple components
  - Both serve as basic building blocks for more complex structure
  - Both have the ability to reproduce
  - Both exhibit variations in their properties based on different arrangements of parts
106. The function of production of fibres and matrix in the body is performed by which of the following cell types?
- Adipose cells
  - Mast cells
  - Plasma cells
  - Fibroblasts
107. Which of the following constricts or dilates the walls of blood vessels in the body?
- Heparin
  - Histamine
  - Both (a) and (b) above
  - Neither of these
108. Which of the following specialised branches of science is concerned with the study of the microscopic structure of tissues and organs?
- Cytology
  - Histology
  - Macro-ecology
  - None of these
109. Vomiting of the contents of stomach and of the upper intestinal tract is a complex reflex coordinated by the vomiting centre in the
- Medulla of the brain
  - Oesophagus
  - Small intestine
  - Stomach

103. A    104. B    105. C    106. D    107. B    108. B  
109. A

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119. Which of the following is the latest advancement in Genetic Engineering?  
 a) DNA Synthesis                      b) Gene splicing  
 c) Plasmids                                d) None of these
120. The process by which Sun rays get converted into chemical energy is called  
 a) Solar absorption                      b) Bio-conversion  
 c) Bio-synthesis                         d) Solar radiation
121. Which one of the following is hermaphrodite?  
 a) Bedbug                                  b) Hookworm  
 c) Mosquito                                d) Earthworm
122. Through which of the following are hereditary characters transmitted from one generation to another?  
 a) Endoplasmic reticulum              b) Chromosomes  
 c) Mitochondria                         d) None of these
123. Bacteriophage possesses its genetic material in  
 a) Its head                                  b) Between head and tail  
 c) In all its parts                         d) Its tail
124. In photosynthetic bacteria, in the presence of light  
 a) Oxygen is produced                  b) ADP is converted  
 c) Oxygen is never produced  
 d) None of these
125. Iron is present in the human blood in the form of a  
 a) free salt                                  b) complex  
 c) compound                                d) Mixture
126. Blood sugar is the amount of \_\_\_\_\_ in the circulating blood  
 a) Galactose                                b) Lactose  
 c) Sucrose                                  d) Glucose
127. What role is played by the layers of the dead cells of stratum corneum in the body?  
 a) Eliminate water, salts and other products.  
 b) Protect the layers of the living cells underneath from injury  
 c) Help the skin to perceive sensations of cold, heat, touch etc.  
 d) None of these
128. Which of the following produces vitamin D for the body?  
 a) Liver                                      b) Lungs  
 c) Stomach                                  d) Skin

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119. B	120. B	121. D	122. B	123. D	124. A
125. C	126. D	127. B	128. D		

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138. Which of the following branches of science is concerned with the classification of organisms?
- a) Agronomy
  - b) Genealogy
  - c) Histology
  - d) Taxonomy
139. For his studies on hybridisation, Gregor Mendel made use of
- a) Cow-peas
  - b) Garden-peas
  - c) Sweet-peas
  - d) Winged-beans
140. The skin has various types of epidermal and dermal modifications in different vertebrates. In this regard, which of the following statements is not correct?
- a) Birds have feathers
  - b) The skin of reptiles and fishes is naked but is kept moist with mucus secretion
  - c) Nails, hooves, antlers, horns, claws are examples of skin derivatives
  - d) Mammals have hair
141. Leucocytes and lymphocytes perform which of the following functions in the body?
- a) Constrict or dilate the walls of blood vessels and prevent coagulation of blood respectively
  - b) Synthesise antibodies
  - c) Ingest all debris, bacteria and foreign matter
  - d) Produce fibres and matrix respectively
142. Metabolic processes yield substances which are harmful to the body. These are rendered harmless in the
- a) Small intestine
  - b) Liver
  - c) Pancreas
  - d) Stomach
143. When the level of bile pigments increases in the plasma, which of the following is/are stained yellow (called jaundice)?
- a) White of the eye only
  - b) Mucus membranes and skin
  - c) Both (a) and (b) above
  - d) None of these
144. In which of the following human organs does fat consumed gets broken down into fatty acids and glycerol?
- a) Duodenum
  - b) Oesophagus
  - c) Stomach
  - d) Small intestine

138. D    139. B    140. B    141. C    142. B    143. C  
144. D





154. What is the distance covered by blood circulation in our body?  
 a) 20 miles                      b) 268 m  
 c) 168 m                         d) None of the above
155. Name the most important organ in our body.  
 a) Brain                         b) Heart  
 c) Lungs                        d) None of the above
156. Who discovered the effect of ultra-violet rays?  
 a) Bunsen                        b) Fuisen  
 c) Curie                         d) None of the above
157. Who invented ironlung?  
 a) Philip Brinker                b) George Beregove  
 c) Dr. P.K. Sen                 d) B.C. Roy
158. Where was India's first biological park installed?  
 a) Tamil Nadu                  b) Uttar Pradesh  
 c) Kerala                        d) None of the above
159. The pancreas secretes  
 a) Insulin                        b) Bile juice  
 c) Vitamin A                    d) None of the above
160. Which controls muscles?  
 a) Will                            b) Brain  
 c) Heart                         d) None of the above
161. What is odontography?  
 a) Study of tongue                b) Study of nose  
 c) Study of teeth                d) Study of bones
162. Which vitamin keeps sterility?  
 a) Vitamin K                    b) Vitamin E  
 c) Vitamin B<sub>12</sub>                 d) None of the above
163. Who among the following contributed to deciphering the genetic code?  
 a) J.D. Watson and Francis Crick  
 b) Marshall Nirenberg, Severo Ochoa and Hargobind Khorana  
 c) Linus Pauling                 d) Barbara McClintock
164. What is femur?  
 a) Thigh bone                    b) Ear bone  
 c) Another name for a wild cat  
 d) None of the above

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154. C	155. A	156. B	157. A	158. A	159. A
160. A	161. C	162. B	163. B	164. A	

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186. B    187. B    188. B    189. B    190. B    191. A  
192. B    193. A    194. C    195. A

196. What is the use of liquid Renin?  
 a) Making milk into curd  
 b) To maintain blood in a liquid form  
 c) Not to produce too much of biles  
 d) None of the above
197. The function of haemoglobin is  
 a) destruction of bacteria      b) prevention of anaemia  
 c) utilisation of energy      d) transport of oxygen
198. Lungs are situated in the  
 a) pericardial cavity      b) abdominal cavity  
 c) thoracic cavity      d) buccal cavity
199. What is the volume of blood that can be donated by a healthy man at a time?  
 a) 300 ml      b) 200 ml  
 c) 100 ml      d) None of the above
200. Biologists have so far known, found and identified a large number of species in the plant and animal kingdoms. In terms of numbers, the largest found and identified so far is from among the  
 a) fungi      b) plants  
 c) insects      d) bacteria
201. How many wisdom teeth does a human being have?  
 a) 2      b) 4  
 c) 10      d) 1
202. In the human body a cell that most nearly resembles the cell of an animal's body is  
 a) White blood cell      b) Nerve cell  
 c) Skin cell      d) None of the above
203. Genetic variation in the progeny is brought about usually by  
 a) crossing over      b) vegetative propagation  
 c) mitotic division      d) asexual multiplication
204. The enzyme that is used to join DNA fragments are  
 a) Ligase      b) DNA Ligase  
 c) Cytokinase      d) Enterokinase
205. Which vitamin stops bleeding in the teeth?  
 a) Vitamin D      b) Vitamin K  
 c) Vitamin A      d) Vitamin C

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196. A    197. D    198. C    199. A    200. C    201. B  
 202. A    203. A    204. B    205. D

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206. In the human body most of the digestion occurs in the  
 a) Small intestine                      b) Large intestine  
 c) Stomach                                d) Mouth
207. Which of the following is used as a host in genetic engineering?  
 a) Chlamydomonas                      b) Escherichia coli  
 c) Nitrasomonas                        d) Virus
208. Most of the oxygen carried by the blood is in the  
 a) White cells                              b) Red cells  
 c) Fibrin                                    d) None of the above
209. Name the causal organism of tuberculosis.  
 a) *Mycobacterium*                      b) *Salmonella typhi*  
 c) *Plasmodium*                         d) None of the above
210. The part of the brain most concerned with control of the heart is  
 a) cerebrum                                b) medulla  
 c) cortex                                    d) none of the above
211. Which protects the brain?  
 a) Cranial box                            b) Neurocranium  
 c) Spinal cord                            d) None of the above
212. The salivary gland secretes saliva which contains the enzyme  
 a) Ptyalin                                    b) Renin  
 c) Pepsin                                    d) Lipase
213. Who coined the term 'vitamin'?  
 a) Benting                                 b) Bung  
 c) Suvan                                    d) Celiden
214. Which vitamin dissolves in water?  
 a) Vitamin D                                b) Vitamin B  
 c) Vitamin K                                d) Vitamin C
215. What is the scientific name of human species?  
 a) *Homo sapiens*                         b) *Homo habilis*  
 c) *Homo rudelfensis*                    d) None of the above
216. The salivary enzymes become ineffective in our stomach due to  
 a) change in place of enzyme action  
 b) presence of gastric enzymes  
 c) alkaline pH of the medium  
 d) acidic pH of the medium

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206. A	207. B	208. B	209. A	210. B	211. A
212. A	213. A	214. B	215. A	216. D	

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217. Which of the following is a cell wall degrading enzyme?  
 a) Pectinase                      b) Lipase  
 c) Ligase                          d) Peptidase
218. Red blood corpuscles are formed in the  
 a) liver                              b) bone marrow  
 c) kidneys                         d) blood sugar
219. Which is the smallest living organism?  
 a) Algae                            b) Fungus  
 c) Germ                            d) Virus
220. The size of the virus is so small that it can be seen only with the help of  
 a) Microscope                    b) Electronic Microscope  
 c) Naked eye                      d) None of the above
221. Total volume of blood in a normal human being is  
 a) 5-6 litres                      b) 10-12 litres  
 c) 3-4 litres                      d) 8-10 litres
222. Mutation is  
 a) A factor responsible for plant growth  
 b) A change which affects the offspring of  $F_2$  generation only  
 c) A change that is inherited  
 d) A change which affects the parents only but never inherited
223. The function of endoplasmic reticulum is  
 a) Acrosome formation        b) Lysosome formation  
 c) Synthesis of steroid hormones  
 d) Secretion of proteins
224. Mitosis actually means  
 a) Division of cytoplasm only  
 b) Division of nucleus only  
 c) Reduction in number of chromosomes  
 d) Both nuclear and cytoplasmic division
225. The first person to see a cell under microscope was  
 a) Robert Hooke                b) A.V. Leuwenhock  
 c) T. Schwan                      d) M. Scheleiden
226. Pathway of energy in an ecosystem is  
 a) Cyclic                            b) Unidirectional  
 c) Web-like  
 d) Sometimes cyclic and sometimes unidirectional

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217. A	218. B	219. C	220. A	221. A	222. C
223. C	224. D	225. A	226. A		

---

227. The concentration of which one of the following is the highest in the intra-cellular fluids?
- Iron
  - Sodium
  - Calcium
  - Potassium
228. Fertilisation is the process of
- Fusion of male nucleus with polar nuclei
  - Formation of seed from ovule
  - Fusion of one male gamete with the egg
  - Transfer of pollen from anther to stigma
229. Ligaments and tendons in the body are composed of
- Connective tissue
  - Epithelial tissue
  - Muscular tissue
  - Skeletal tissue
230. Which of the following parts of the skeleton protects the spinal cord?
- Auditory capsule
  - Cranium
  - Olfactory capsule
  - Vertebral column
231. Golgibody is found in
- RBC in man
  - All the cells
  - All the cells except RBC and bacteria
  - Bacterial cells only
232. Which of the following is the smallest functional genetic unit?
- Chromosome
  - Cistron
  - DNA
  - Gene
233. Which of the following is a fusogenic agent?
- Methyl alcohol
  - Citric acid
  - Polyethylene glycol
  - Propyl alcohol
234. Who, among the following, is associated with the theory of inheritance of acquired characteristics?
- Charles Darwin
  - Lamarck
  - Spencer
  - De Vries
235. Who propounded the theory of natural selection?
- Mendel
  - Lamarck
  - Darwin
  - De Vries
236. All unicellular animals and plants are put under the group
- Protozoa
  - Monera
  - Protista
  - Prokaryota

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227. B	228. C	229. B	230. D	231. C	232. B
233. C	234. B	235. C	236. C		

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258. Bile secreted by the liver gets stored in the  
 a) Gall bladder                      b) Duodenum canal  
 c) Liver itself                        d) Spleen
259. If a boy's father has haemophilia and his mother has one gene for it, what is the chance that the boy will inherit the disease  
 a) 100%                                b) 75%  
 c) 50%                                 d) 25%
260. In wrong blood transfusion  
 a) RBCs of recipient agglutinate  
 b) RBCs of donor agglutinate  
 c) WBCs of donor agglutinate  
 d) WBCs of recipient agglutinate
261. Genetic mutation occurs in  
 a) DNA                                 b) RNA  
 c) Chromosomes                    d) Ribosomes
262. Which of the following causes by fermentation, decomposition of organic substances, resulting in simpler compounds?  
 a) Algae                                b) Fungi  
 c) Micro-organisms                d) None of the above
263. Lipase, an enzyme, breaks up  
 a) Fats into fatty acids and glycerine  
 b) Insulin into fructose  
 c) Maltose into glucose  
 d) Peptones into amino acids
264. The basic building blocks of proteins are  
 a) Amino acids                        b) DNA  
 c) Nitrogenous bases                d) RNA
265. Which of the following carry genetic information?  
 a) Carbohydrates                    b) Fatty acids  
 c) Nucleic acids                      d) Proteins
266. Antiserum is a serum containing  
 a) Antibodies                         b) Antigens  
 c) Bacteria                            d) Leucocytes

---

258. A	259. C	260. A	261. A	262. C	263. A
264. A	265. C	266. A			

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- 272. Balanced diet is the one containing**
- sufficient proteins, carbohydrates and fats
  - food items containing all the nutrients which are needed in the right amounts
  - food items proportionately weighed in right amount
  - food items containing minerals, vitamins and hormones
- 273. Which one of the following is known as protein factories of the cell?**
- Lysosomes
  - Chromosomes
  - Ribosomes
  - Golgi bodies
- 274. Which one of the following statements is not a characteristic of echinoderms?**
- All are marine
  - Water vascular system is present
  - The body is segmented
  - Adults are radially symmetrical
- 275. Which one of the following statements correctly defines the term vein?**
- Blood vessel that carries deoxygenated blood
  - Blood vessel that carries oxygenated blood
  - Blood vessel that carries blood towards heart
  - Blood vessel that carries blood away from the heart
- 276. Given below are two statements one labelled as Assertion (A) and the other labelled as Reason (R):**
- Assertion (A) :** Deficiency of iodine in diet may produce myxoedema, a symptom of hypothyroidism.
- Reason: (R) :** Deficiency of iodine reduces the secretion of thyro-tropic hormone.
- In the context of the above two statements which one of the following is correct?
- Both (A) and (R) are true, and (R) is the correct explanation of (A)
  - Both (A) and (R) are true, but (R) is not a correct explanation of (A)
  - (A) is true, but (R) is false
  - (A) is false, but (R) is true

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272. B    273. C    274. C    275. C    276. A

---

**277. Match List I with List II and select the correct answer by using the codes given below the lists:**

List I	List II
A) Auxins	1) Food mobilisation in germinating seeds
B) Cytokinins	2) Parthenocarpy
C) Gibberellins	3) Pre-harvest fruit drop
D) Ethylene	4) Growth hormone

**Codes:**

	A	B	C	D
a)	2	3	1	4
b)	3	2	1	4
c)	3	1	2	4
d)	2	1	3	4

**278. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** The biological processes of growth, development and differentiation enable the plants and animals to enter the functional state of life.

**Reason: (R) :** Various biological and environmental factors regularise the state of life.

**In the context of the above two statements which one of the following is correct?**

- a) Both A and R are true and R is the correct explanation of A  
 b) Both A and R are true but R is not a correct explanation of A  
 c) A is true but R is false      d) A is false but R is true

**279. If the base sequence in one strand of DNA is TAG, ATC, GTT what will be the base sequence in its (i) complementary strand and (ii) transcribed mRNA strand?**

- a) (i) ATC TAG CAA  
 (ii) AUC UAG GAA  
 b) (i) TAG ATC GTT  
 (ii) AUC UAG GAA  
 c) (i) ATC TAG CAA  
 (ii) TAG ATC GTT  
 d) (i) ATC TAG CAA  
 (ii) ATC TAG GAA

277. C    278. B    279. A

280. Match List I with List II and select the correct answer by using the codes given below the lists:

**List I**  
(Organelle)

- A) Nucleus
- B) Idiosome
- C) Chromosome
- D) Cell

**List II**  
(Discoverer)

- 1) Robert Hooke
- 2) Robert Brown
- 3) Golgi
- 4) Waldeyer

**Codes:**

	A	B	C	D
A)	2	3	4	1
B)	3	2	1	4
C)	4	3	2	1
D)	1	2	3	4

281. Sea sickness is due to the effect of the motion of ship on
- a) internal ear
  - b) heart
  - c) stomach
  - d) eyes
282. Cancer is caused due to
- a) bacterial infection
  - b) non-malignant tumour
  - c) uncontrolled cell division
  - d) nutritional deficiency
283. The substance lost from the human body during dehydration is
- a) Iodine
  - b) Sodium chloride
  - c) Sugar
  - d) Potassium chloride
284. Carbohydrates are stored in the body as
- a) glucose
  - b) starch
  - c) glycogen
  - d) sucrose
285. Which one of the following diseases is genetically linked?
- a) Epilepsy
  - b) AIDS
  - c) Colour-blindness
  - d) Leucoderma
286. Why do cells produce less energy for work when red blood cells count of blood goes down?
- a) Low blood pressure
  - b) Slow rate of blood circulation
  - c) Poor nutrient supply
  - d) Poor oxygen supply
287. A teaspoonful of which of the following has highest caloric value?
- a) Groundnut oil
  - b) Pure ghee
  - c) Corn oil
  - d) Granular sugar

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280. A    281. C    282. C    283. B    284. B  
285. C    286. D    287. A

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288. When should the blood sample of a patient be taken for best test of malarial parasites?  
a) An hour before the usual rise of temperature  
b) When the body temperature rises with vigour  
c) When the temperature comes down to normal  
d) A few hours after the temperature returns to normal
289. Which part of the human body is first adversely affected by nuclear radiation?  
a) Eyes  
b) Lungs  
c) Skin  
d) Bone marrow
290. Muscles of which of the following parts of the body are the strongest?  
a) Thigh  
b) Wrist  
c) Finger  
d) Jaw
291. What is the general shape of the bacteria?  
a) Spheres  
b) Spirals  
c) Rods  
d) Cubes
292. Which one of the following in the bloodstream is reduced most by excessive vomiting and diarrhoea?  
a) Calcium  
b) Sodium  
c) Potassium  
d) Iron
293. The largest cell in the human body is  
a) Nerve cell  
b) Muscle cell  
c) Liver cell  
d) Kidney cell
294. All of the following foods lack vitamin except  
a) Cheese  
b) Milk  
c) Meat  
d) Rice
295. The main function of white blood cells in the body is to  
a) carry oxygen  
b) help in clot formation  
c) produce more red cells  
d) protect body against diseases
296. Serum differs from blood plasma in that the former lacks  
a) WBC  
b) RBC  
c) Fibrinogen  
d) Glucose
297. A person has taken a large amount of meat which contains high protein. His urine will contain more of  
a) Glycogen  
b) Glucose  
c) Creatinine  
d) Urea

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288. B	289. A	290. D	291. A	292. B	293. A
294. D	295. D	296. C	297. D		

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298. Decrease in white blood corpuscles results in  
 a) decrease in antigens      b) decrease in antibodies  
 c) increase in antibodies      d) No chance
299. Pituitary is called a master gland because  
 a) it is situated in the brain      b) it controls other glands  
 c) it is the largest in size      d) it secretes many hormones
300. An enzyme is a substance that can convert complex organic substances into simple ones. It is  
 a) a fat      b) a protein  
 c) a mineral      d) a carbohydrate like sugar
301. A woman's reproductive capacity lasts from the age of puberty to about  
 a) 45-50 years      b) 55-60 years  
 c) 40-45 years      d) 60-65 years
302. The blood is oxygenated and purified in which of the following parts of human body?  
 a) Kidney      b) Lungs  
 c) Liver      d) Heart
303. Meninges are  
 a) membranes covering the heart  
 b) connective tissue membranes covering the brain  
 c) secretions of the pancreas  
 d) myelin sheath on the nerve fibre
304. Which one of the following symptoms of nutritional deficiency disorders is specific to vitamin C deficiency?  
 a) Cracks on lips      b) Spongy bleeding gums  
 c) Pale conjunctivae      d) Rashes on skin
305. Consider the following functions:  
 I. Regulating the loss of excess water from the body  
 II. Removal of waste products from blood.  
 III. Maintaining the balance of the body  
 IV. Maintaining a constant composition of blood  
 The main function(s) of the kidney would include  
 a) I alone      b) I and II  
 c) II, III and IV      d) I, II, III and IV

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298. B    299. B    300. B    301. a    302. b    303. B  
 304. B    305. B

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**306. Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):**

**Assertion (A) :** On entering a dark room one cannot see much but within a few seconds one's sight is adjusted to the dim light.

**Reason (R) :** Adaptation means any structural, physiological and biochemical change in the living organisms which enables it to take advantage of its environment.

**In the context of the above two statements which one of the following is correct?**

- a) Both (A) and (R) are true and (R) is the correct explanation of (A)
  - b) Both (A) and (R) are true, but (R) is not a correct explanation of (A)
  - c) (A) is true, but (R) is false
  - d) (A) is false, but R is true
- 307. Which one of the following theories was proposed by A.I. Oparin and J.B.S. Haldane?**
- a) Biochemical theory of origin of life
  - b) Life begets life
  - c) Chromosome theory of inheritance
  - d) Theory of natural selection
- 308. Any change in the sequence of nucleotides in DNA is known as**
- a) Induction
  - b) Mutation
  - c) Cloning
  - d) Replacement
- 309. The selection of a dairy bull should be based on**
- a) progeny testing
  - b) family performance
  - c) height
  - d) weight
- 310. Blood is classified biochemically as a**
- a) cell
  - b) liquid
  - c) tissue
  - d) cartilage
- 311. In brain, the site for intelligence, memory and emotion is present in**
- a) cerebrum
  - b) cerebellum
  - c) medulla
  - d) hypothalamus

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306. B    307. A    308. B    309. C    310. C    311. A

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312. The double helix structure of DNA molecule was proposed by  
 a) James Waston and Francis Crick  
 b) Max Perutz and Maurice Wilkins  
 c) Rosalind Franklin and Maurice Wilkins  
 d) Hargobind Khorana and Arthur Kornberg
313. Which one of the following provides a direct evidence in favour of organic evolution?  
 a) Homologous structures    b) Fossils  
 c) Embryonic stages        d) Analogous structures
314. The smallest blood vessel is called  
 a) Vena cava                      b) Artery  
 c) Capillary                      d) Aorta
315. Man's nearest relative in animal world is  
 a) The common rhesus monkey  
 b) Gorilla  
 c) Chimpanzee                      d) Gibbon
316. A post-mortem study usually involves an analysis of liver. This is so because the liver shows a fairly correct picture of the dead person's  
 a) age                                  b) glycogen content  
 c) food taken by him              d) history of illness
317. Warm-blooded animals maintain a high body temperature for faster  
 a) digestion                          b) breathing  
 c) breeding                          d) movement
318. Which of the following group of compounds constitute carbohydrates?  
 a) Fats and sugar  
 b) Fats, sugar and proteins  
 c) Starch, sugar and proteins  
 d) Starch and sugar
319. The hormone which regulates the basal metabolism in our body is secreted from  
 a) Pituitary                          b) Thyroid  
 c) Adrenal cortex                      d) Pancreas

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312. A	313. B	314. C	315. C	316. B	317. C
318. D	319. B				

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- 320. The natural wax and lac are obtained as**  
 a) Petroleum products      b) Resins of forest plants  
 c) Byproducts of sugar industry  
 d) Insect secretions
- 321. The pituitary gland by virtue of its tropic hormones controls the secretory activity of other endocrine glands. Which one of the following endocrine glands can function independent of the pituitary gland?**  
 a) Thyroid      b) Gonads  
 c) Adrenals      d) Parathyroid
- 322. Oxygen transportation in a human body takes place through**  
 I) Blood      II) Lungs      III) Tissue  
 a) I, II, III      b) III, I, II  
 c) II, I, III      d) I, III, II
- 323. Corpus luteum is a mass of cells found in**  
 a) brain      b) ovary  
 c) pancreas      d) spleen
- 324. Match List I with List II and select the correct answer:**
- | List I (Organalle) |  | List II (Function)                     |  |
|--------------------|--|--|--|
| A) Cell wall       |  | 1) Controls the movement of substances |  |
| B) Plasma membrane |  | 2) Provides shape                      |  |
| C) Ribosome        |  | 3) Protein synthesis                   |  |
| D) Golgi body      |  | 4) Secretion                           |  |
- |      | A | B | C | D |
|------|---|---|---|---|
| a) 2 | 1 | 3 | 4 |   |
| b) 1 | 2 | 3 | 4 |   |
| c) 2 | 1 | 4 | 3 |   |
| d) 1 | 2 | 4 | 3 |   |
- 325. Consider the following statements about the liver:**  
 I. It secretes bile which helps in the digestion of fat.  
 II. It assists in the transport of oxygen from one part of the body to the other.  
 III. It acts as a storage organ of high energy molecules such as fat.  
 IV. It acts as a storage organ for glycogen.  
 a) I and III are correct      b) I and IV are correct  
 c) II and IV are correct      d) I, II and III are correct

320. D    321. D    322. C    323. B    324. A    325. B



**326. Consider the following statements:**

**Assertion (A) :** Ecosystem is a functional system which, in a balanced condition, is self-sufficient and self-regulated.

**Reason: (R) :** Ecosystem has a natural tendency to counteract in order to maintain the functional balance.

**Of these statements:**

- a) Both A and R are true, and R is the correct explanation of A
- b) Both A and R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

**327. The main difference between vaccine and toxoid is that vaccines are**

- a) live pathogens administered in the body in small amounts to produce immunity whereas toxoids are killed organisms
- b) those pathogenic organisms that are administered in the body orally whereas toxoids are administered by injection
- c) the toxins are produced by viruses while toxoids are produced by bacteria
- d) killed organisms or attenuated pathogenic agents whereas toxoids are detoxified toxins of pathogen

**328. An example of biotechnology is the**

- a) application of modern technology to understand the living systems
- b) construction of plants to produce fodder for animals
- c) manufacturing equipment for the study of micro-organisms
- d) using micro-organisms to synthesise insulin

**329. We have four types of teeth. What is the correct order in which they appear in man?**

- a) Premolar, Molar, Canine, Incisor
- b) Incisor, Premolar, Canine, Molar
- c) Premolar, Canine, Molar, Incisor
- d) Incisor, Canine, Premolar, Molar

**330. Nutritive value of food stuff is increased by**

- a) canning
- b) enrichment
- c) fortification
- d) pasteurization

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326. A    327. C    328. A    329. D    330. B

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334. The nutrients that are essential for synthesis of haemoglobin would include
- Calcium, phosphorus and iron
  - Vitamin A and protein
  - Vitamin B<sub>12</sub>, iron and folic acid
  - B vitamins and iron
335. From the point of evolution, the most significant feature of meiosis is
- Gamete production
  - Genetic recombination
  - Segregation
  - Reduction of chromosome number
336. Cycling of elements between living and non-living components of the biosphere is known as
- Biological cycles
  - Biogeochemical cycles
  - Biogeocoenosis
  - Geobiocoenosis
337. The sequencing of the entire genome (the totality of all genes) of an organism was completed in 1996. The organism was:
- albino mouse
  - yeast
  - human being
  - plasmodium vivax*

338. Match List I with List II and select the correct answer using the codes given below the lists:

List I (Disease)	List II (Organism)
A) Malaria	1) Fungi
B) Poliomyelitis	2) Bacteria
C) Tuberculosis	3) Virus
D) Ringworm	4) Protozoan

Codes:

	A	B	C	D
a)	4	3	2	1
b)	4	3	1	2
c)	3	4	1	2
d)	3	4	2	1

339. Haemophilia is a genetic disorder which leads to
- decrease in haemoglobin level
  - rheumatic heart disease
  - decrease in WBC
  - non-clotting in blood

334. C    335. B    336. B    337. C    338. A    339. D

346. Man cannot digest cellulose whereas cows can do so, because
- their gut contains certain bacteria capable of digesting cellulose
  - they have a many chambered stomach
  - they have efficient grinding molars
  - they produce an enzyme cellulase which can digest cellulose
347. Match List I with List II and select the correct answer using the codes given below the lists:

List I	List II
A) Islets of Langerhans	1) Calcitonin
B) Pituitary gland	2) Epinephrine
C) Thyroid gland	3) Growth hormone
D) Adrenal gland	4) Insulin

Codes:

	A	B	C	D
a)	4	3	2	1
b)	4	3	1	2
c)	3	4	1	2
d)	3	2	4	1

348. The blood pressure values of four persons are given below:

- |                 |                   |
|-----------------|-------------------|
| 1) Mrs. X 90/60 | 3) Mr. X 60/120   |
| 2) Mr. Y 20/80  | 4) Mrs. Y 140/100 |

Who among the following has normal blood pressure?

- |           |          |
|-----------|----------|
| a) Mrs. X | b) Mr. X |
| c) Mrs. Y | d) Mr. Y |
349. Three communicable diseases prevalent in developing countries caused by unsafe drinking water and bad sanitation are
- acute diarrhoea, cancer and gout
  - malaria, acute diarrhoea and schistosomiasis
  - onchocerciasis, leukaemia and arthritis
  - rheumatism, malaria and AIDS
350. Scratching eases itching because
- it removes the outer dust in the skin
  - it kills the germs
  - it stimulates certain nerves which direct the brain to increase the production of antihistaminic chemicals
  - it suppresses the production of enzymes which cause itching

346. A    347. B    348. B    349. D    350. B





371. "It begins as a single cell and grows into a merciless disease that claims millions of lives year after year. But scientists are steadily unlocking its mysteries, and the fight against it may now have reached a dramatic turning point. New discoveries promise better therapies and hope in the war against". This disease referred to in the above quotation is
- a) Cancer
  - b) AIDS
  - c) Tuberculosis
  - d) Alzheimer's disease
372. Which one of the following sets is correctly matched?
- a) Diphtheria, Pneumonia and Leprosy - Hereditary
  - b) AIDS, Syphilis and Gonorrhoea - Bacterial
  - c) Colour blindness, Hemophilia and Sickle cell anaemia - Sex-linked
  - d) Polio, Japanese B encephalitis and Plague - Viral
373. Which one of the following hormones contains iodine?
- a) Thyroxine
  - b) Testosterone
  - c) Insulin
  - d) Adrenaline
374. Who predicted that only one factor would enter into the gamete, even before meiosis was discovered?
- a) Darwin
  - b) T.H. Morgan
  - c) Mendel
  - d) de Vries
375. Fat present below the skin surface in our body acts as a barrier against
- a) loss of heat from the body
  - b) loss of essential body fluids
  - c) loss of salts from the body
  - d) entry of harmful micro-organisms from the environment
376. Which of the following would lead to malnutrition?
1. Over nutrition
  2. Under nutrition
  3. Imbalanced nutrition
- Select the correct answer from the codes given below:
- a) 2 alone
  - b) 2 and 3
  - c) 1 and 3
  - d) 1, 2 and 3

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371. A 372. C 373. A 374. C 375. A 376. B

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384. Which of the following is an energy producer?  
 a) carbohydrates                      b) protein  
 c) mineral                                d) vitamins
385. The unit used to measure the energy released during oxidation of food is  
 a) Kelvin                                    b) Joule  
 c) Joules/kg                                d) Calorie
386. Which one of the following food gives the maximum energy yield per gram?  
 a) carbohydrates                      b) glucose  
 c) fat                                         d) protein
387. The element necessary for the formation of haemoglobin and chromatins is  
 a) Sodium                                  b) Iron  
 c) Iodine                                    d) Manganese
388. The deficiency of which element causes anaemia?  
 a) Iron                                        b) Sodium  
 c) Iodine                                    d) Manganese
389. The mineral essential for formation of thyroxin is  
 a) Magnesium                            b) Chlorine  
 c) Iodine                                    d) Potassium
390. The mineral essential for water balance is  
 a) Magnesium                            b) Chlorine  
 c) Sodium                                  d) Potassium
391. The chemical name for vitamin A is  
 a) Retinol or Antixerophthalmic  
 b) Calciferol  
 c) Thiamine  
 d) Tocopherol
392. Deficiency of vitamin A leads to  
 a) Beri-beri                                b) Pellagra  
 c) Rickets                                    d) Xerophthalmia
393. The vitamin which is formed by the action of ultra-violet rays of sunlight on a substance of the skin is  
 a) Vitamin A                                b) Vitamin D  
 c) Vitamin C                                d) Vitamin E

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384. A	385. D	386. C	387. B	388. A	389. C
390. B	391. A	392. D	393. B		

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- 394. Rickets disease is due to deficiency of**  
 a) Vitamin C                      b) Vitamin D  
 c) Vitamin E                      d) Vitamin A
- 395. Deficiency of vitamin B<sub>1</sub> (thiamine) leads to**  
 a) Scurvy                          b) Pernicious anaemia  
 c) Pellagra                        d) Beri-beri
- 396. The chemical name for vitamin B<sub>2</sub> is**  
 a) Retinol                          b) Niacin  
 c) Thiamine                        d) Riboflavin
- 397. Deficiency of nicotinic acid leads to**  
 a) Scurvy                          b) Beri-beri  
 c) Rickets                          d) Pellagra
- 398. *Columba livia* is the scientific name for**  
 a) pigeons                        b) snake  
 c) rabbit                            d) shark
- 399. Disease formed due to deficiency of cyanocobalamine (vitamin B<sub>12</sub>) is**  
 a) Scurvy                          b) Pernicious anaemia  
 c) Rickets                          d) Pellagra
- 400. Deficiency of ascorbic acid (vitamin C) leads to**  
 a) Scurvy                          b) Beri-beri  
 c) Pellagra                        d) Rickets
- 401. The process of conversion of complex organic food substances into simpler substances is**  
 a) assimilation                      b) absorption  
 c) digestion                        d) active transport
- 402. The length of our alimentary canal is**  
 a) 10 metres                        b) 8 metres  
 c) 20 metres                        d) 16 metres
- 403. Of the following, which one acts as an antibacterial agent?**  
 a) Lysosome                        b) Heparin  
 c) Lysin                            d) Lysozyme
- 404. The conversion of absorbed food materials into protoplasm is**  
 a) assimilation                      b) egestion  
 c) absorption                        d) ingestion

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394. B	395. D	396. D	397. D	398. A	399. B
400. A	401. C	402. B	403. D	404. A	

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438. The cells which secrete insulin are  
a) Oxyntic cells                      b) Beta cells  
c) Alpha cells                        d) Medullary cells
439. The hormone which controls blood sugar level is  
a) insulin                              b) adrenalin  
c) nor-epinephrine                  d) glucagon
440. The hormone which also acts as an anti-inflammatory agent is  
a) cortisone                          b) nor - epinephrine  
c) epinephrine                        d) aldosterone
441. The hormone which causes rise in blood pressure is  
a) testosterone                      b) adrenalin  
c) nor-adrenalin                      d) aldosterone
442. The hormone which causes an increase in heart beat is  
a) aldosterone                        b) nor-adrenalin  
c) adrenalin                          d) cortisone
443. The uterus is situated in  
a) sacral region                      b) pectoral cavity  
c) lumbar region                      d) pelvis cavity
444. Menstrual cycle occurs for about  
a) 25 days                              b) 14 days  
c) 28 days                              d) 30 days
445. The permanent birth control method for male is  
a) Vasectomy                        b) the condom  
c) Tubectomy                        d) Cervical cap
446. The permanent birth control method for female is  
a) Copper-T                          b) Vasectomy  
c) Tubectomy                        d) Diaphragm
447. The branch of biology that deals with heredity is  
a) Cell biology                        b) Genetics  
c) Histology                          d) Paleontology
448. The failure of clotting of blood is known as  
a) Anaemia                            b) Erythroblastosis  
c) Polycythemia                      d) Haemophilla
449. The normal duration for clotting of blood is  
a) 2-4 minutes                        b) 2-5 minutes  
c) 2-8 minutes                        d) 2-6 minutes
- 

438. B	439. A	440. A	441. C	442. C	443. D
444. C	445. A	446. C	447. B	448. D	449. C

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- 450.** The disease colour blindness was discovered by  
a) Wilson                      b) Anderson  
c) Robertson                d) Bunsen
- 451.** Haemophilia is also known as  
a) breeder's disease          b) red disease  
c) bleeder's disease         d) None of the above
- 452.** 'O' blood group persons can receive blood from only  
a) AB group                    b) A group  
c) 'O' group                   d) B group
- 453.** Persons with which blood group are called as universal donors?  
a) O group                      b) B group  
c) AB group                    d) A group
- 454.** Individuals with which blood group are called as universal recipients?  
a) B group                      b) A group  
c) AB group                    d) O group
- 455.** Rh - factor was discovered by  
a) A.S. Wiener and Landsteiner  
b) Robertson  
c) Calvin  
d) Lamarck and Weisman
- 456.** A method to improve mankind by improving environmental condition is  
a) Euthenics                    b) Positive eugenics  
c) Eugenics                     d) None of these
- 457.** Incomplete dominance was observed in  
a) *Pisum sativum*                b) *Arachis hypogea*  
c) *Bryophyllum*                d) *Mirabilis jalapa*
- 458.** The blood vessels which leave from the heart are called \_\_\_\_\_ in human body.  
a) veins                         b) neurons  
c) aorta                         d) arteries
- 459.** Of the following which one is the biological agent of communicable disease?  
a) urea                          b) fat  
c) mycoplasma                 d) heat

450. A 451. C 452. C 453. A 454. C 455. A  
456. A 457. D 458. D 459. C

**480. Which pair is not correctly matched?**

- a) Insulin - Diabetes
- b) Virus - AIDS
- c) Jaundice - Kidney
- d) Bacteria - Typhoid

**481. The injection of 'anti-toxin' is given to prevent**

- a) typhoid
- b) tuberculosis
- c) tetanus
- d) measles

**482. The disease jaundice is associated with the organ**

- a) Lungs
- b) Liver
- c) Teeth
- d) Brain

**483. The cross used to determine the purity of parents is**

- a) Monohybrid cross
- b) Back cross
- c) Test cross
- d) Dihybrid cross

**484. What is the correct sequence of the following in a heart attack?**

- 1) Narrowing of the inner orifice of the vessel
- 2) 'Plaque' from fibrous tissue and high cholesterol
- 3) Inadequate supply of blood and oxygen
- 4) Clots of blood carried into the coronary arteries

**Choose the answer from the codes given below:**

- a) 1, 2, 3, 4
- b) 2, 4, 1, 3
- c) 2, 3, 1, 4
- d) 4, 2, 1, 3

**485. The head is jointed to the vertebral column by which type of joint?**

- a) Saddle joint
- b) Hinge joint
- c) Gliding joint
- d) Pivot joint

**486. The normal temperature of human body is**

- a) 98.4°C
- b) 36.9°C
- c) -37°C
- d) 98.5°C

**487. Rate of pulsation of an adult per minute is**

- a) 70 to 80
- b) 50 to 60
- c) 80 to 90
- d) 90 to 100

**488. The disease beri-beri is caused by the deficiency of which vitamin in the body?**

- a) Vitamin C
- b) Vitamin A
- c) Vitamin B
- d) Vitamin K

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480. C	481. C	482. B	483. C	484. B	485. C
486. A	487. A	488. A			

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- 489.** The chemistry of vision is associated with vitamin  
a) B                                      b) A  
c) C                                      d) D
- 490.** Deficiency of haemoglobin in the blood causes  
a) Anaemia                                b) Leukemia  
c) Leucoderma                          d) High Blood pressure
- 491.** Which of the following are characteristics shown by a breast-fed baby when compared to a bottle-fed baby?  
1) It is less obese  
2) It shows greater capacity to resist diseases  
3) It gets more vitamins and proteins  
4) Its growth in height is abnormal  
**Select the correct answer from the codes given below:**  
a) 1, 2, and 3                            b) 1, 2 and 4  
c) 1, 3 and 4                            d) 2, 3 and 4
- 492.** Which one of the following secretes hormones in the human body?  
a) Plasma cells                          b) Endocrine glands  
c) Salivary glands                      d) Prostate glands
- 493.** Which of the following were seen after the electron microscope was made available to the cell biologists?  
1) DNA double helix                  2) Chromosomes  
3) Ribosomes                            4) Lysosomes  
**Choose the answer from the codes given below:**  
a) 1 and 2                                b) 3 and 4  
c) 2 and 4                                d) 1 and 3
- 494.** Which of the following statements are true of mongolism or Down's syndrome?  
1) Mongoloid child has a total of 47 genes  
2) Children born to older women are more likely to be mongoloids  
3) It is sex-linked  
4) Mongoloids have eyes slit-like, flat nose and protruding tongue  
**Choose the answer from the codes given below:**  
a) 1 and 2                                b) 2 and 3  
c) 3 and 4                                d) 2 and 4
- 495.** Which one of the following is not an asexual reproduction?  
a) Binary fission                        b) Sporulation  
c) Regeneration                        d) Conjugation

489. B    490. A    491. A    492. B    493. D    494. A  
495. D

496. A person with 'AB' blood group is sometimes called a universal recipient because of the-
- lack of antigen in his blood
  - lack of antibodies in his blood
  - lack of both antigens and antibodies in his blood
  - presence of antibodies in his blood
497. Which one of the following is a membrane that protects the developing embryo from desiccation?
- Amnion
  - Allantois
  - Chorion
  - Yolk sac
498. The abiotic parts of a self-sufficient pond-water ecosystem include
- water, small fishes, phosphates and nitrates
  - water, dissolved  $O_2$ ,  $CO_2$  and insects
  - water, phytoplankton, zooplankton and bacteria
  - water, dissolved  $O_2$ ,  $CO_2$  and inorganic salts
499. Consider the following methods:
- Embryo transfer technique
  - Transgenic experiments
  - Use of appropriate fertilisers
- Genetic improvement of livestock can be achieved by
- I and III
  - I and II
  - II alone
  - II and III
500. Match List I with List II and select the correct answer using the codes given below the lists:

List I				List II			
A)	Rodents			1)	Scabies		
B)	Itch-mite			2)	Guineaworm disease		
C)	Eggs			3)	Tapeworm infestation		
D)	Step well			4)	Salmonella poisoning		

Codes:

	A	B	C	D
a)	4	1	2	3
b)	1	4	2	3
c)	1	3	4	2
d)	3	1	4	2



496. B    497. A    498. D    499. B    500. A



## • BOTANY •

- Which of the following is not a natural fibre?
  - Nylon
  - Cellulose
  - Cotton
  - Starch
- Which one of the following occurs during photosynthesis of green plants?
  - Light energy is converted into biochemical energy
  - Light energy is destroyed
  - Light energy is stored in food molecules
  - Light energy is synthesised
- Potato, ginger and turmeric are not roots but portions of the stem. This is due to the fact that
  - they have storage food materials
  - they possess nodes, internodes and scaly and foliage leaves
  - they have suberin, cutin and lignin
  - they have xylem and phloem
- Match List I with List II and select the correct answer by using the codes given below the lists:

### List I

- A) Primary root  
B) Tap-root  
C) Fibrous root\*  
D) Adventitious root

### List II

- 1) It is formed due to repeated branching of the radicle.
- 2) It is primary root and its branches.
- 3) Roots arise at any place other than the root system.
- 4) It is direct prolongation of the radicle as noticed in nearly all dicotyledonous plants.

**Codes:**

	A	B	C	D
a)	4	2	1	3
b)	1	2	3	4
c)	3	4	2	1
d)	2	1	4	3

**Ans.** 1. A 2. A 3. B 4. A

5. The best soil for healthy and vigorous growth of most of the plants is
  - a) clay
  - b) loam
  - c) sand
  - d) silt
6. Sometimes a branch of the plant is bent towards the ground and covered with moist soil. When new roots emerge, the plantlets are separated from the parent plant. It is known as
  - a) Grafting
  - b) Cutting
  - c) Layering
  - d) Budding
7. Green plants evolve oxygen during the day rather than carbon-dioxide. This means that
  - a) green plants respire only at night
  - b) green plants do not respire
  - c) green plants respire during day but rate of respiration is very low
  - d) the rate of photosynthesis is much higher than the rate of respiration
8. Photosynthesis generally takes place in which parts of the plant?
  - a) Leaf and other chloroplast bearing parts
  - b) Stem and leaf
  - c) Roots and other chloroplast bearing parts
  - d) Bark and leaf
9. Which of the following are the characteristics of monocotyledon plants?
  - I. Leaf veins run parallel to one another.
  - II. Tracheids are predominant.
  - III. Secondary growth is absent due to lack of cambium.
  - IV. Vascular bundles are scattered randomly.

Select the correct answer by using the codes given below:

  - a) I, II and III
  - b) II, III and IV
  - c) I, II and IV
  - d) I, III and IV
10. Which one of the following is an appropriate description of mangrove plants?
  - a) Large wood-yielding trees of the tropical forests
  - b) Red sandalwood plants
  - c) Plants in marshy areas with breathing roots
  - d) Medicinal plants

---

5. B    6. D    7. D    8. A    9. D    10. C

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11. *Chlorella* is a suitable plant for an astronaut in space travel because
  - a) it provides oxygen to the astronaut and carbon dioxide released is utilised for his/her food manufacture
  - b) it supplies abundant food to the astronaut
  - c) it is a single-celled autotrophic plant
  - d) its growth is quite rapid during space flight
12. During early morning, the insects are prompted for pollination from one flower to another flower due to warm
  - a) sun
  - b) climate
  - c) flower
  - d) air
13. A leaf adapted to a warm, dry climate is
  - a) large and thin
  - b) small and thin
  - c) large and thick
  - d) small and thick
14. Which one of the following crops can enrich soil with nitrogenous compounds?
  - a) Mustard
  - b) Rice
  - c) Sugarcane
  - d) Black gram
15. Which of the following possesses chlorophyll?
  - a) Bacteria
  - b) Algae
  - c) Fungi
  - d) Mushrooms
16. Which one of the following plants does bear no fruits but produces seeds?
  - a) Groundnut
  - b) Sugarcane
  - c) Cycas
  - d) Almond
17. What is common in sunflower, coconut and groundnut?
  - a) Their fruits are edible
  - b) Their seeds are edible
  - c) These are rich sources of fibre
  - d) These provide edible oils
18. The red colour of ripe tomatoes is due to the presence of
  - a) chlorophyll
  - b) carotenoids
  - c) vitamins
  - d) hormones
19. The cross-section of the trunk of a tree showed fifty rings. What is the age of the tree?
  - a) 50 months
  - b) 5 years
  - c) 25 years
  - d) 50 years

---

11. A	12. D	13. D	14. D	15. B	16. C
17. D	18. B	19. D			

---

**20. Consider the following statements:**

**Assertion (A) :** If a short-day plant which has been growing under long days condition is transferred temporarily to short days condition and then returned to a long-day environment, flowering will often be initiated

**Reason (R) :** It has been postulated that some substances are produced in the leaves which are translocated to the apical meristems, thus inducing their conversion from the vegetative to reproductive condition.

**Of these statements:**

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true, but R is not the correct explanation of A
- c) A is true, but R is false
- d) A is false, but R is true

**21. Consider the following statements:**

- I. In photosynthesis, carbon dioxide is consumed and oxygen is liberated.
- II. Chlorophyll is a must for photosynthesis in plants.
- III. Photosynthesis is a unique function of underground modified roots.

**Of these statements:**

- a) I, II and III are correct
- b) I and II are correct
- c) II and III are correct
- d) I and III are correct

**22. Onion is a modified form of which of the following?**

- a) Leaf
- b) Stem
- c) Root
- d) None of these

**23. How is maize pollinated?**

- a) Self-pollinated
- b) Cross-pollinated by insects
- c) Cross-pollinated by wind
- d) Cross-pollinated by rain

**24. A plant cell has the potential to develop into an entire plant. This property of the plant cells is known as**

- a) gene cloning
- b) totipotency
- c) tissue culture
- d) pluripotency

---

20. D    21. B    22. B    23. A    24. B

---

25. Petroleum products can be obtained by hydrocracking low molecular weight hydrocarbons present in the latex of some plants. Such plants belong to the family of

- a) *Leguminosae*                      b) *Liliaceae*  
c) *Euphorbiaceae*                      d) *Solanaceae*

26. Which one of the following plants can be used as indicator of pollution?

- a) Lichens                                  b) Liverworts  
c) Neem Tree                              d) Tulsi

27. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List-I**

- A) Fruit  
B) Seed  
C) Wood  
D) Starch

**List-II**

- 1) Ovule  
2) Leaf  
3) Stem  
4) Ovary

**Codes:**

	A	B	C	D
a)	2	1	3	4
b)	4	1	3	2
c)	2	3	1	4
d)	4	3	1	2

28. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List-I**

(Types of roots)

- A) Prop roots  
B) Climbing roots  
C) Leaf roots  
D) Stilt roots

**List-II**

(Examples)

- 1) Banyan  
2) Pan or betel  
3) Keura or ketucky  
4) Bryophyllum or Azooba

**Codes:**

	A	B	C	D
a)	1	2	3	4
b)	2	1	4	3
c)	2	1	3	4
d)	1	2	4	3

25. C    26. D    27. B    28. D

29. Which one of the following statements regarding starch and cellulose is not correct?

- a) Both of them are of plant origin
- b) Both of them are polymers
- c) Both of them give colour with iodine
- d) Both of them are made up of glucose molecules

30. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List -I**

- A) Edible banana
- B) Mangrove plant
- C) Proteins in the grains
- D) Reservoir of nutrients

**List-II**

- 1) Vivipary
- 2) Aleurone
- 3) Endosperm
- 4) Parthenocarpy

**Codes:**

	A	B	C	D
a)	1	4	2	3
b)	4	1	3	2
c)	4	1	2	3
d)	1	4	3	2

31. Match List-I with List-II and select the correct answer by using the codes given below the lists:

**List -I**

- A) Carrot
- B) Groundnut
- C) Lady's finger
- D) Potato

**List-II**

- 1) Cotyledon
- 2) Stem
- 3) Root
- 4) Fruit

**Codes:**

	A	B	C	D
a)	3	1	4	2
b)	2	3	1	4
c)	4	2	3	1
d)	1	4	2	3

32. Photosynthesis is a biochemical process for the transfer of solar energy to

- a) nitrogen cycle
- b) hydraulic cycle
- c) petrological cycle
- d) food chain cycle

---

29. C    30. C    31. A    32. D

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53. Double fertilisation in angiosperms results in  
 a) one diploid cell only      b) one triploid cell only  
 c) one haploid cell and one triploid cell  
 d) one diploid cell and one triploid cell
54. What is the temperature required for a seed to grow?  
 a) 25°C to 30°C      b) 20°C to 25°C  
 c) 23°C to 50°C      d) None of the above
55. Where was tomato cultivated for the first time in the world?  
 a) South America      b) India  
 c) Arabia      d) None of the above
56. The site of photosynthesis is  
 a) vacuoles      b) chloroplast  
 c) mitochondria      d) none of the above
57. Which one of the following fruits has a seed outside?  
 a) Mango      b) Banana  
 c) Cashewnut      d) None of the above
58. Which plant is known commonly as egg-plant?  
 a) Brinjal      b) Tomato  
 c) Potato      d) Carrot
59. Where do the green plants store their food?  
 a) Stems      b) Leaves  
 c) Roots      d) None of the above
60. Which one of the following chemicals is used to find out whether starch is in a leaf?  
 a) Iodine      b) Copper  
 c) Chlorine      d) None of the above
61. In a cross between a tall (dominant) and a dwarf (recessive) plant, half of the progeny became tall and the other half dwarf, thereby indicating the genotypes of the parents as  
 a) TT, Tt      b) TT, tt  
 c) Tt, tt      d) tt, tt
62. Give an example of a single leaf.  
 a) Mango leaf      b) Banyan leaf  
 c) Arasu leaf      d) Neem leaf
63. Which is the tree that gives turpentine oil?  
 a) Oak tree      b) Pine tree  
 c) Mango tree      d) None of the above

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53. C	54. A	55. A	56. B	57. C	58. A
59. B	60. A	61. B	62. A	63. B	

---

64. 'Micronutrients' are the elements which are needed in very small quantities but play major roles in structural organisation of the plants. Which one of the following is a correct list of 'micronutrients'?
- Copper, iron and phosphorus
  - Iron, phosphorus
  - Copper, iron and zinc
  - Phosphorus, zinc and copper
65. Where is the Birbal Sahni Institute of Palaeobotany located in India?
- Mumbai
  - Lucknow
  - Chennai
  - Bhopal
66. Legumes are sources of
- Carbohydrate
  - Fats
  - Proteins
  - None of the above
67. Which plant has the largest bloom?
- Canna*
  - Rafflesia*
  - Hibiscus*
  - Golden lilies
68. Fruits are rich in
- Minerals
  - Vitamins
  - Minerals and Vitamins
  - Fats
69. Which is the tallest tree in the world?
- Cycad
  - Redwood
  - Pine
  - Conifer
70. Who introduced the double cross method in corn?
- George H. Shull
  - Charles Darwin
  - Donald James
  - Asha Gray
71. Soya beans is rich in
- Protein
  - Carbohydrate
  - Oil
  - Vitamin
72. The fertility of the soil can be increased by growing
- cereals
  - fibre crops
  - legumes
  - root crops
73. Who is known as the father of Modern Indian Algology?
- M.V.R. Iyengar
  - Sundaram
  - Subramaniam
  - Smith
74. Which plant is affected by canker's disease?
- Mango
  - Coffee
  - Lemon
  - None of the above

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64. C	65. B	66. B	67. B	68. C	69. B
70. C	71. A	72. C	73. A	74. C	

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- 460. Enzymes differ from ordinary catalysts in**  
 a) That they are non-proteins  
 b) That they are produced outside the living cells  
 c) That they are proteins  
 d) None of these
- 461. Which of the following situations will be fatal to the first foetus?**  
 a) Rh positive male marries Rh positive woman  
 b) Rh positive male marries Rh negative woman  
 c) Rh negative male marries Rh positive woman  
 d) Rh negative male marries Rh negative woman
- 462. Which one of the following is a 'pinworm'?**  
 a) Ankyclostoma                      b) Wucheria  
 c) Ascaris                                d) Oxyuris
- 463. Which one of the following reptiles has four-chambered heart?**  
 a) Snake                                b) Turtle  
 c) Crocodile                            d) Lizard
- 464. Organisms at the base of the food chain are**  
 a) Photosynthetic plants    b) Herbivores  
 c) Carnivores                        d) Decomposers
- 465. Suppose in a balanced green forest, the number of tigers was doubled. This would gradually**  
 a) increase primary carnivores  
 b) increase the biomass of herbivores  
 c) decrease the biomass of herbivores  
 d) decrease the biomass of producers
- 466. If the fins of a fish are damaged, which of the following activities would suffer?**  
 a) Speed and respiration  
 b) Speed and changing direction  
 c) Locomotion and excretion  
 d) Locomotion and respiration
- 467. The insects which are highly destructive to building and wooden structures are**  
 a) Weevils                                b) Cockroach and Ants  
 c) Corn-borer                            d) Termites

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460. D    461. B    462. C    463. C    464. A    465. C  
 466. B    467. D

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468. The epidermis is made up of four distinct layers of epithelial cells. From the innermost to the outermost position, the correct sequence of these layers is
- Malpighian, Granulosum, Lucidum, Corneum
  - Corneum, Granulosum, Lucidum, Malpighian
  - Granulosum, Lucidum, Malpighian, Corneum
  - Lucidum, Corneum, Malpighian, Granulosum
469. From which stage of silk moth is silk obtained?
- Pupa
  - Adult
  - Cocoons
  - Caterpillar
470. Sleeping sickness is transmitted from one host to another by the vector known as
- Culex Fatigans*
  - Glossina Morsitans*
  - Glossina Palpalis*
  - Trypanosoma gambiense*
471. The dermis has skin pigment cells called
- Dendrites
  - Erythrocytes
  - Melanocytes
  - Monocytes
472. The lowermost layer of epithelial cells of the epidermis is called
- Corneum
  - Granulosum
  - Lucidum
  - Malpighian
473. Of how many distinct layers of epithelial cells is epidermis made up of?
- 2
  - 3
  - 4
  - 5
474. Animals do not have enzyme systems which enable them to make use of the energy from
- Fat
  - Water
  - Protein
  - Carbohydrates
475. A clone is a colony of
- Cells having different shapes
  - Cells having similar shapes
  - Cells having similar genetic constitutions
  - Cells having different genetic constitutions
476. What does make the blood look red?
- Red corpuscles
  - Haemoglobin
  - Plasma
  - Certain secretions

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468. A    469. C    470. C    471. C    472. D    473. C  
 474. C    475. C    476. B

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