

ONLINE TEST - I**ANSWERS & HINTS****ANSWERS**

1. (2)	37. (1)	73. (4)	109. (2)	145. (1)
2. (4)	38. (4)	74. (3)	110. (3)	146. (4)
3. (2)	39. (4)	75. (1)	111. (1)	147. (3)
4. (3)	40. (4)	76. (2)	112. (3)	148. (3)
5. (4)	41. (4)	77. (4)	113. (3)	149. (4)
6. (1)	42. (3)	78. (1)	114. (4)	150. (2)
7. (4)	43. (1)	79. (4)	115. (4)	151. (2)
8. (2)	44. (2)	80. (4)	116. (2)	152. (3)
9. (3)	45. (4)	81. (3)	117. (4)	153. (3)
10. (1)	46. (1)	82. (3)	118. (4)	154. (3)
11. (1)	47. (2)	83. (3)	119. (3)	155. (3)
12. (4)	48. (1)	84. (4)	120. (3)	156. (1)
13. (3)	49. (4)	85. (4)	121. (4)	157. (4)
14. (1)	50. (2)	86. (4)	122. (3)	158. (4)
15. (4)	51. (1)	87. (3)	123. (2)	159. (2)
16. (1)	52. (2)	88. (4)	124. (3)	160. (3)
17. (1)	53. (2)	89. (2)	125. (4)	161. (1)
18. (4)	54. (1)	90. (3)	126. (4)	162. (2)
19. (4)	55. (2)	91. (4)	127. (1)	163. (2)
20. (3)	56. (1)	92. (2)	128. (3)	164. (2)
21. (4)	57. (4)	93. (3)	129. (2)	165. (3)
22. (3)	58. (1)	94. (3)	130. (3)	166. (1)
23. (4)	59. (3)	95. (4)	131. (3)	167. (3)
24. (2)	60. (1)	96. (4)	132. (4)	168. (3)
25. (4)	61. (4)	97. (1)	133. (1)	169. (3)
26. (2)	62. (1)	98. (4)	134. (3)	170. (3)
27. (2)	63. (2)	99. (3)	135. (2)	171. (4)
28. (2)	64. (1)	100. (2)	136. (3)	172. (4)
29. (4)	65. (2)	101. (3)	137. (4)	173. (2)
30. (4)	66. (3)	102. (2)	138. (3)	174. (4)
31. (4)	67. (3)	103. (3)	139. (4)	175. (3)
32. (3)	68. (4)	104. (4)	140. (3)	176. (3)
33. (4)	69. (1)	105. (2)	141. (4)	177. (4)
34. (4)	70. (4)	106. (1)	142. (1)	178. (3)
35. (2)	71. (3)	107. (2)	143. (4)	179. (3)
36. (4)	72. (2)	108. (4)	144. (4)	180. (3)



Hints to Selected Questions

[PHYSICS]

1. Answer (2)

$$a = \frac{GM}{R^2} \Rightarrow \frac{G}{a} = \frac{R^2}{M} = [M^{-1}L^2T^0]$$

2. Answer (4)

$$y = A \sin(kx - \omega t)$$

$$\Rightarrow \frac{\partial^2 y}{\partial x^2} = -Ak^2 \sin(kx - \omega t) = [L^{-1}]$$

3. Answer (2)

During uniform circular motion, speed remains constant, the velocity changes its direction as it is tangential in nature but angular velocity does not change its direction (for one sense of revolution) as it is axial in nature.

4. Answer (3)

The angle subtended by the tangent to the graph is positive initially and as the graph progresses with the value of x , the angle θ decreases to zero as graph becomes parallel to the x -axis.

5. Answer (4)

Law of conservation of mechanical energy and law of conservation of mass are not fundamental laws.

6. Answer (1)

$$v_{\max} = \sqrt{\frac{2\alpha\beta}{\alpha+\beta}} s = \sqrt{2 \times \frac{6 \times 3}{6+3}} \times 16 = 8 \text{ m/s}$$

7. Answer (4)

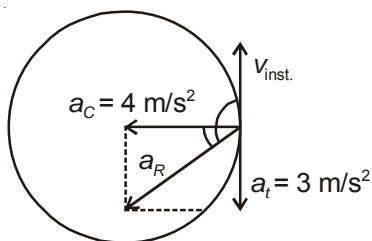
Let the length of the train be $2l$. Then,

$$(3v)^2 - v^2 = 2al$$

$$v'^2 - (3v)^2 = 2al$$

$$\therefore v' = \sqrt{17} v$$

8. Answer (2)



$$\frac{a_t}{a_c} = \tan \phi = \frac{3}{4}$$

$$\therefore \phi = 37^\circ$$

$$\theta = 90^\circ + \phi = 127^\circ$$



9. Answer (3)

Average acceleration,

$$a_{av} = \frac{\text{Change in velocity}}{\text{Time taken}} = \frac{2v}{\frac{7}{2}\pi r} = \frac{4v^2}{7\pi r}$$

10. Answer (1)

$$\frac{dP}{dT} \quad \frac{nR}{V}$$

Hence, greater the slope, lesser is the volume.

11. Answer (1)

$$C_{eq} = C_1 + C_2 = [(30 + 60) \pm (2 + 4)] \mu F = (90 \pm 6) \mu F$$

12. Answer (4)

$$x^3 = 8t \Rightarrow x = 2t^{1/3}$$

$$\therefore \frac{dx}{dt} = \frac{2}{3}t^{-2/3}$$

$$\text{At } t = 8 \text{ s, } v = \frac{1}{6} \text{ m/s}$$

13. Answer (3)

Time taken to cross the river in shortest time depends only on width of river and swimmer's speed in still water.

Time taken to cross the river through shortest path also depends on the river speed.

$$t = \frac{d}{\sqrt{v_s^2 - v_r^2}}$$

v_s = Swimmer's speed in still water

v_r = River speed

Hence, greater the value of v_r , greater will be the value of t .

14. Answer (1)

Bosons are responsible for weak nuclear force.

15. Answer (4)

$$\text{The maximum area} = R_{\max}^2 \frac{u^2 \sin^2 45^\circ}{g} = \frac{u^4}{g^2}$$

16. Answer (1)

Radius of curvature,

$$\rho = \frac{v^2}{g \cos \alpha} = \frac{u^2 \cos^2}{g} = \frac{u^2 \cos}{g} \frac{2 \sin \cos}{2 \sin} = \frac{R}{2} \cot$$

17. Answer (1)

$$a = 4v \Rightarrow \frac{vdv}{dx} = 4v \Rightarrow \frac{dv}{dx} = \frac{4}{v}$$

$$\Rightarrow \frac{dx}{dt} = 4x \Rightarrow \frac{dx}{x} = 4dt$$

$$\therefore \ln x = 4t \text{ or } x = e^{4t}$$



18. Answer (4)

$$\text{Time to reach ground } t = \sqrt{9 \times 4} = 6 \text{ s}$$

$$\therefore v = gt = 9.8 \times 6 = 58.8 \text{ m/s}$$

(Remember $g = 9.8 \text{ m/s}^2$ is more accurate than 10 m/s^2 , so 58.8 m/s is more correct option when given)

19. Answer (4)

$\frac{\text{Young's Modulus}}{\text{Velocity gradient}}$ has the dimension of viscosity.

20. Answer (3)

Dimensional analysis can be used to determine incorrectness of an equation only in some cases.

Also, this method cannot be used to determine the constants associated with the equation.

21. Answer (4)

22. Answer (3)

$$y = \sqrt{2x} \Rightarrow y^2 = 2x$$

$\therefore y^2 \propto x$, hence y^2 vs x graph is a straight line.

23. Answer (4)

$$\text{Mean value of } \sin d = \frac{\int_0^d \sin d \, dd}{d} = \frac{2}{d}$$

24. Answer (2)

$\frac{\vec{A} \cdot \vec{B}}{B^2} \vec{B}$ is the component of $\vec{A} \parallel \vec{B}$. Hence, the component of \vec{A} perpendicular to \vec{B} and lying in the plane

containing \vec{A} and \vec{B} is $\vec{A} - \frac{\vec{A} \cdot \vec{B}}{B^2} \vec{B}$

25. Answer (4)

$$|\vec{A} \cdot \vec{B}| = |\vec{A}| |\vec{B}| \cos \theta$$

$$\Rightarrow \sin \theta = \cos \theta$$

$$\theta = 45^\circ$$

26. Answer (2)

$$\sqrt{v^2 + 2y} = 2 \Rightarrow v^2 - 2^2 = -2 \times 1 \times y$$

$$\therefore u = 2 \text{ m/s}, a = -1 \text{ m/s}^2$$

The particle will start retracing when $v = 0$

$$\therefore t = \frac{v - u}{a} = \frac{0 - 2}{-1} = 2 \text{ s}$$

27. Answer (2)

Numerical constants cannot be deduced using dimensional analysis.

28. Answer (2)

$$1 - \cos 2x = 2 \sin^2 x$$

$$\therefore \int_0^1 (1 - \cos 2x - 2 \cos^2 x) dx = \int_0^1 (2 \sin^2 x - 2 \cos^2 x) dx = 2 \int_0^1 dx = 2$$



29. Answer (4)

For maximum or minimum value of

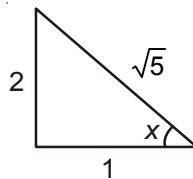
$$y = 2 \sin x + \cos x$$

$$\frac{dy}{dx} = 0 \quad 2 \cos x - \sin x = 0 \text{ and}$$

$$\frac{d^2y}{dx^2} = (2 \sin x - \cos x); \text{ which is } < 0, \text{ if } \theta < 90^\circ$$

$$\text{and } > 0, \text{ if } \theta > 180^\circ$$

$$\text{but } < 270^\circ$$



Hence, maxima is $\sqrt{5}$ and minima is $-\sqrt{5}$.

30. Answer (4)

31. Answer (4)

$$y^2 = A^2 t, \quad x = \frac{B}{t}$$

$$\therefore x = \frac{A^2 B}{y^2}$$

$$\therefore x = \frac{1}{y^2}, \text{ hence locus is hyperbola.}$$

32. Answer (3)

Velocity and displacement at any instant are in the same direction. Velocity and acceleration can have same or different direction.

33. Answer (4)

$$\frac{v}{10} = \frac{t}{5} - 1 \quad v = 2t - 10$$

34. Answer (4)

$$\text{At A, slope } \frac{dy}{dx} = 0 \text{ and } \frac{d^2y}{dx^2} < 0$$

35. Answer (2)

$$M = F^x W^y t^z = [M L T^{-2}]^x [L T^{-1}]^y [T]^z$$

$$= M^x L^{x+y} T^{-2x-y+z}$$

On solving, $x = 1, y = -1$ and $z = 1$

$$\therefore M = [10^3 \text{ N}]^1 [20 \text{ m/s}]^{-1} [7200 \text{ s}]^1$$

$$= 3.6 \times 10^5 \text{ kg.}$$



36. Answer (4)

$\frac{F}{K}$ has the dimension of L .

ω has the dimension of T^{-1} .

$\therefore \frac{F}{K}$ has the dimension of $L T^{-1}$.

37. Answer (1)

$$t_1 = \frac{u}{g \sin \theta}, \quad t_2 = \frac{u \sin \theta}{g}$$

$$\therefore \sqrt{t_1 t_2} = \frac{u}{g}$$

38. Answer (4)

The relative speed is given by $v - v \cos \frac{2\pi}{6} = \frac{v}{2}$.

\therefore Relative speed = 1 m/s.

In regular hexagon, distance covered by each friend is equal to the side of the parks. Hence,

$$d = 1 \times 60 = 60 \text{ m}$$

39. Answer (4)

$\frac{Z}{Z} = a \frac{A}{A} = b \frac{B}{B}$ is true only when ΔZ , ΔA , ΔB are very small as compared to Z , A and B respectively.

40. Answer (4)

The express $\frac{\rho v d}{\eta}$ represents Reynold number which is dimensionless.

41. Answer (4)

$$v_{\max} = \frac{\alpha \beta}{\alpha + \beta} T = \frac{2 \times 1}{2 + 1} \times 60 = 40 \text{ m/s}$$

42. Answer (3)

The vertical motion of both the balls undergo same acceleration due to gravity and deceleration due to air friction.

43. Answer (1)

In uniform circular motion, speed ($|\vec{v}|$) is constant, hence, $\frac{d|\vec{v}|}{dt} = 0$ but as the direction is changing, the

acceleration $\left| \frac{d\vec{v}}{dt} \right| \neq 0$

44. Answer (2)

$$|\vec{R}| = |\vec{R}'| \text{ means,}$$

$$|\vec{A} - \vec{B}| = |\vec{A} + \vec{B}|$$

$$A^2 + B^2 + 2AB \cos \theta = A^2 + B^2 - 2AB \cos \theta$$

$$\therefore 4AB \cos \theta = 0$$

$$\therefore \theta = 90^\circ \quad [\text{If } |\vec{A}| \neq 0, |\vec{B}| \neq 0]$$

$$\therefore \vec{A} \perp \vec{B}$$

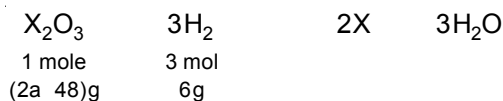
45. Answer (4)

Initial velocity is in the horizontal direction. Since, velocity at any instant will have this horizontal velocity as a component, hence instantaneous velocity will never be vertical.



[CHEMISTRY]

46. Answer (1)



\therefore 0.005 g H_2 is required by 0.2 g oxide

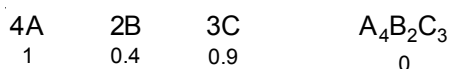
$$\therefore 6 \text{ g } H_2 \text{ will be required by } \frac{0.2 \times 6}{.005} = \frac{1.2}{0.005}$$

$$= 240$$

$$\therefore 2a + 48 = 240$$

$$\therefore a = \frac{192}{2} = 96$$

47. Answer (2)

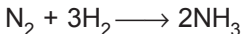


Reactant 'B' will be limiting reactant because it will give least amount of product

\therefore 2 mole 'B' gives 1 mole product

$$\therefore 0.4 \text{ mole 'B' gives } \frac{1}{2} \times 0.4 = 0.2 \text{ mole of product.}$$

48. Answer (1)



H_2 is limiting reagent.

Number of moles of N_2 taken = 0.223

Number of moles of N_2 reacted = 0.074

Number of moles of N_2 left = 0.223 - 0.074
= 0.149 mol

49. Answer (4)

Volume of solution = 100 ml

Mass of solution = 100 \times 1.14 = 114 g

$$\text{ppm of NaCl solution} = \frac{40}{114} \times 10^6 = 0.35 \times 10^6 \text{ ppm}$$

50. Answer (2)

$$\text{Moles} = \frac{7.2 \times 10^3}{18} \times 0.4 \times 10^3$$

Number of ions = $0.4 \times 10^{-3} \times 6.023 \times 10^{23}$

\therefore Number of electrons in one ion of NH_4^+ = 10

$$\therefore \text{Number of electrons in } 7.6 \text{ mg } NH_4^+$$

$$= 0.4 \times 10^{-3} \times 6.023 \times 10^{23} \times 10 = 2.4 \times 10^{21}$$



51. Answer (1)

52. Answer (2)

\therefore 100 g haemoglobin has = 0.50 g Fe

\therefore 44800 g haemoglobin has = $\frac{0.5}{100} \times 44800$ g Fe = 224 g Fe

i.e., 1 mole or 'N' molecules of haemoglobin has

$$= \frac{224}{56} \text{ g atom 'Fe'} = 4 \text{ g-atom 'Fe'}$$

\therefore 1 molecule of haemoglobin has '4' atom of Fe

53. Answer (2)

5 L gas weighs \longrightarrow 9 g

\therefore 22.4 L gas weighs $\longrightarrow \frac{9}{5} \times 22.4 \text{ g} = 40.32$

\therefore Molecular weight of gas = 40.32

and vapour density = $\frac{40.32}{2} = 20.16$

54. Answer (1)

Molecular mass of chloride

$$\text{MCl}_x = 59.5 \times 2 = 119 \quad \text{or} \quad a + 35.5x = 119$$

$$\Rightarrow E \times x + 35.5x = 119 \quad (\because E = 4)$$

$$x \times \frac{119}{39.5} = 3.01 \approx 3$$

55. Answer (2)

Let mass of metal = x g

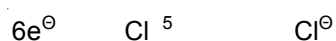
$$\text{Mass of metal oxide} = x \times \frac{25}{100} \times \frac{5x}{4}$$

$$\text{Mass of oxygen} = \frac{5x}{4} \times \frac{x}{4}$$

$$\frac{\text{Weight of metal}}{\text{equivalent weight of metal}} = \frac{\text{Weight of oxygen}}{8}$$

$$\Rightarrow \frac{x}{E} = \frac{x}{4 \times 8} \quad \therefore E = 32$$

56. Answer (1)

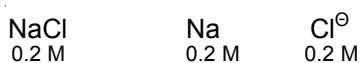
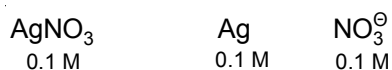


$$\text{Equivalent weight} = \frac{M}{6}$$

57. Answer (4)



58. Answer (1)



For NO₃[⊖]

$$M_1V_1 = M(V_1 + V_2)$$

$$\Rightarrow 0.1 \times V = x \times 2V$$

$$x \times \frac{0.1}{2} = 0.05 \text{ M}$$

59. Answer (3)

60. Answer (1)

61. Answer (4)

62. Answer (1)

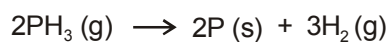
$$\text{Normality} = \text{Molarity} \times n \text{ factor} = 0.4 \times 2 = 0.8 \text{ N}$$

63. Answer (2)

Molarity > Molality

When $d_{\text{solvent}} = 1$

64. Answer (1)

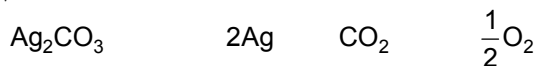


Before dissociation : 200 0 0

After dissociation : (200 - 100 × 2) - 300

∴ Change in volume = 300 - 200 = 100 ml increase

65. Answer (2)



∴ 276 g Ag₂CO₃ gives 216 g 'Ag'

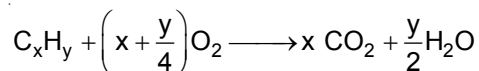
∴ 3 g Ag₂CO₃ gives $\frac{216}{276} \times 3 = 2.347$ gram

66. Answer (3)

Normality = Molarity × n-factor

For H₃BO₃, basicity = 1 i.e., Normality = Molarity

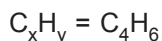
67. Answer (3)



10	55	0	0
0	0	40	

$$x + \frac{y}{4} = \frac{55}{10} = 5.5 \quad x = \frac{40}{10} = 4$$

$$\Rightarrow \frac{y}{4} = 5.5 - 4 = 1.5 \Rightarrow y = 6$$



68. Answer (4)

69. Answer (1)

$$(E_n)_{Li^2} = 13.6 \frac{z^2}{n^2} \text{ eV/atom} = 13.6 \frac{(3)^2}{n^2}$$

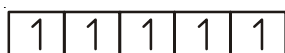
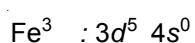
$$E_H = 13.6 \frac{(1)^2}{(4)^2}$$

$$\therefore (E)_{Li^2} = E_H \Rightarrow \frac{(3)^2}{n^2} = \frac{1}{(4)^2}$$

$$n = \sqrt{9 \times 16} = 3 \times 4 = 12$$

70. Answer (4)

71. Answer (3)


 $3d^5$

Half filled (more stable)

72. Answer (2)

$$T = \frac{2 r_n}{V_n} = \frac{2 r_1 n^2}{\frac{V_1}{n}} \quad T \propto n^3 \quad (\because n = 2)$$

73. Answer (4)

The electron in H-atom is excited to 3rd shell after absorbing 12.1 eV; because,

$$E_3 - E_1 = \frac{13.6}{9} = 13.6 - 12.1$$

Thus, possible transitions are $\sum (3 - 1) = 3$

74. Answer (3)

$$c = v \times \lambda$$

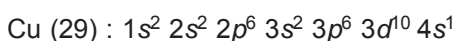
$$\lambda = \frac{c}{v} = \frac{3 \times 10^8}{8 \times 10^{15}} \text{ m} = \frac{3}{8} \times 100 \text{ nm}$$

$$= 37.5 \text{ nm}$$

$$= 3.7 \times 10 \text{ nm}$$

$$\approx 4 \times 10 \text{ nm}$$

75. Answer (1)

For $l = 1$, p -subshell $l = 2$, d -subshell

76. Answer (2)

Number of radial node = $n - l - 1$

$$\text{For } 4s \Rightarrow 4 - 0 - 1 = 3$$

$$\text{For } 3p \Rightarrow 3 - 1 - 1 = 1$$



77. Answer (4)
 78. Answer (1)
 79. Answer (4)
 80. Answer (4)
 81. Answer (3)
 82. Answer (3)

$$m \sqrt{n(n-2)} \text{ B.M.}$$

n = Number of unpaired electron

$$m \sqrt{4(4-2)} = \sqrt{24} = 4.9 \text{ B.M.}$$

i.e., ion is $\text{Mn}^{3+} : 3d^4 4s^0$

83. Answer (3)

Three peaks in the curve starting from origin corresponds to 3s-orbital

For 3s-orbital,

$$\text{Number of radial node} = n - \ell - 1 = 3 - 0 - 1 = 2$$

84. Answer (4)

$$\therefore \frac{1}{\text{short}} R(1)^2 \frac{1}{n_1^2} \frac{1}{n_2^2} = \frac{R}{(1)^2} \Rightarrow \boxed{R \frac{1}{5}}$$

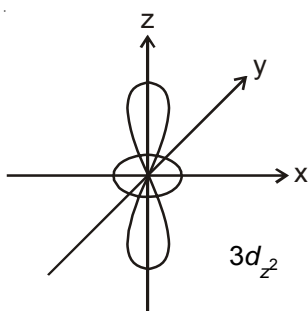
For He ,

$$n_1 = 2, n_2 = 3$$

$$\begin{aligned} \frac{1}{\text{Long}} &= R (2)^2 \frac{1}{n_1^2} \frac{1}{n_2^2} \\ &= R \cdot 4 \frac{1}{(2)^2} \frac{1}{(3)^2} = \frac{4R(9-4)}{4 \cdot 9} \end{aligned}$$

$$\text{Long} \frac{9}{5}$$

85. Answer (4)



86. Answer (4)

$$\text{Orbital angular momentum} = \sqrt{l(l+1)} \frac{h}{2\pi}$$

For 3p-orbital, $l = 1$

$$= \sqrt{1(1+1)} \frac{h}{2\pi} = \frac{\sqrt{2}h}{2\pi}$$



For 1s-orbital, $\mu_l = 0$

$$l = 0$$

For 2s-orbital, $\mu_l = 0$

$$l = 0$$

For 3d-orbital,

$$l = 2$$

$$r = \sqrt{2(2+1)} \frac{\sqrt{6}h}{2}$$

87. Answer (3)

88. Answer (4)

89. Answer (2)

90. Answer (3)

[BIOLOGY]

91. Answer (4)

Increase in mass and increase in number are twin characteristics of growth.

92. Answer (2)

In plants, growth by cell division occurs continuously throughout their life span.

93. Answer (3)

In majority of higher plants and animals, growth and reproduction are mutually exclusive events.

94. Answer (3)

Prions

95. Answer (4)

Mycorrhiza

96. Answer (4)

97. Answer (1)

98. Answer (4)

(B) Living reactions

99. Answer (3)

100. Answer (2)

101. Answer (3)

1.7 million $\left\{ \begin{array}{l} 1.2 \text{ million animal species} \\ 0.5 \text{ million plant species} \end{array} \right.$

102. Answer (2)

103. Answer (3)

104. Answer (4)

Systematics includes phylogeny.

105. Answer (2)

Same species and subspecies/variety name



106. Answer (1)
Names and description of 5900 plant species in Species Plantarum
107. Answer (2)
Obligate categories are 7 and intermediate categories are 21.
108. Answer (4)
Classical or old taxonomy
109. Answer (2)
Viral disease.
110. Answer (3)
111. Answer (1)
Santapau/father of Indian taxonomy
112. Answer (3)
Systematics includes evolutionary relationships.
113. Answer (3)
Biological concept of species given by Ernst Mayr and was based on reproductive isolation.
114. Answer (4)
Polytypic genera have more than one species.
115. Answer (4)
Diptera is order and remaining three options belong to family.
116. Answer (2)
117. Answer (4)
Lower the taxa, more are the characteristics that the members within the taxon share.
118. Answer (4)
Genus and species ranked below category family.
119. Answer (3)
Species represents genetically closed system because individuals share same gene pool.
120. Answer (3)
It is a bacterial virus.
121. Answer (4)
122. Answer (3)
41 × 29 cm/16.5 × 11.5 inches.
123. Answer (2)
(B) Preserved plant specimens.
124. Answer (3)
– Key is used for identification of plants and animals both.
– Each statement of key is called lead not couplet.
– Different taxonomic keys are required for each taxonomic category not similar taxonomic key.
125. Answer (4)
Tournefort → term genus.
126. Answer (4)
127. Answer (1)
NMNH



128. Answer (3)
Zoological parks can be used for breeding of rare fauna and *ex-situ* conservation.
129. Answer (2)
Monograph contains information on any one taxon.
130. Answer (3)
Flora provides index to the plant species found in a particular area.
131. Answer (3)
Carl Woese → domains of life.
132. Answer (4)
All; (1), (2) & (3) are correct.
133. Answer (1)
Since cell wall present.
134. Answer (3)
135. Answer (2)
Mode of nutrition was also used as a criterion.
136. Answer (3)
In five kingdom system of classification, *Paramecium* and *Amoeba* were placed in protista.
137. Answer (4)
Four kingdoms: (i) Monera, (ii) Protista, (iii) Fungi and (iv) Animalia include heterotrophic members.
138. Answer (3)
Autotrophic members are included in three kingdoms (i) Monera, (ii) Protista, (iii) Plantae.
139. Answer (4)
16 S rRNA base sequencing.
140. Answer (3)
Fungi
141. Answer (4)
They are very complex in behaviour.
142. Answer (1)
143. Answer (4)
Rhizobium leguminosarum exhibits a variety of shapes.
144. Answer (4)
L-lysine is absent in Gram negative bacteria but diaminopimelic acid is present.
145. Answer (1)
Pseudomurein is present in Archaeobacteria.
146. Answer (4)
In *Escherichia*, Flagella are distributed all over the cell.
147. Answer (3)
Pili usually absent.
148. Answer (3)
80S ribosomes in eukaryotes.
149. Answer (4)
Clostridium is obligate anaerobe.



150. Answer (2)

In (3) & (4) options bacteria use non-sulphur aliphatic organic compounds as electron and H⁺ donor.

151. Answer (2)

$$2^6 \times 50 = 64 \times 50 = 3200$$

152. Answer (3)

Core cytoplasm and cortex of endospore.

153. Answer (3)

Extra chromosomal DNA or plasmid.

154. Answer (3)

In transduction bacteriophage is involved and in conjugation, conjugation tube is involved in transfer of genetic material.

155. Answer (3)

156. Answer (1)

Xanthomonas citri causes citrus canker.

157. Answer (4)

In archaeobacteria, peptidoglycan is absent in cell wall and branched chain lipid is present in plasma membrane.

158. Answer (4)

159. Answer (2)

Absence of PS-II

160. Answer (3)

Nitrocystis is a nitrifying bacteria.

161. Answer (1)

Mycoplasma is a facultative anaerobe.

162. Answer (2)

Protista: This kingdom forms a link with Plantae, Fungi and Animalia.

163. Answer (2)

The wall is not embedded with pectin but in place of it silica is embedded in cell wall.

164. Answer (2)

This character is found in diatoms.

165. Answer (3)

Cell wall is absent. Pellicle is elastic proteinaceous covering.

166. Answer (1)

Spores are dispersed by air current.

167. Answer (3)

Albugo candida causes white rust of crucifers (mustard).

168. Answer (3)

Conidia, sporangiospore and zoospore.

169. Answer (3)

Dolipore septum is found in basidiomycetes, not in ascomycetes.

170. Answer (3)

Fungi → Heterotrophs.

171. Answer (4)

Option (1), (2) & (3) are concerned with phycomycetes.



172. Answer (4)
173. Answer (2)
Conidia
174. Answer (4)
Morels belong to Ascomycetes.
175. Answer (3)
Neurospora is known as *Drosophila* of plant kingdom.
176. Answer (3)
DNA or RNA, not both.
177. Answer (4)
Root galls by nematodes.
178. Answer (3)
It is smaller than viruses.
179. Answer (3)
Air pollution.
180. Answer (3)
Water and minerals to algal partner.



All India Aakash Test Series-2013

Online Test - I

TOPIC COVERED

PHYSICS :

Mathematical tools, Physical World, Units and Measurements, Kinematics

CHEMISTRY :

Some basic Concepts of Chemistry, Structure of Atom

BIOLOGY :

Living World, Biological Classification



Time : 3 Hrs.

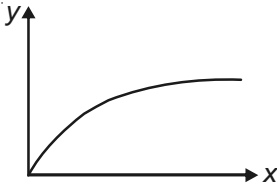
MM : 180

All India Aakash Test Series-2013

Online Test - I

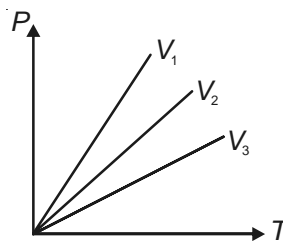
[PHYSICS]

Choose the correct answer :

- The ratio of universal gravitational constant and acceleration $\frac{G}{a}$ is represented by
 - $[M^1L^2T^{-1}]$
 - $[M^{-1}L^2T^0]$
 - $[M^1L^{-2}T^0]$
 - $[M^{-1}L^2T^{-1}]$
- If a physical quantity is given by $y = A\sin(kx - \omega t)$ where symbols have usual meaning, then the dimensional formula for $\frac{\partial^2 y}{\partial x^2}$ is best described by
 - $[M^0L^0T^{-1}]$
 - $[M^{-1}L^0T^{-1}]$
 - $[M^0L^1T^0]$
 - $[M^0L^{-1}T^0]$
- Which of the following quantity/quantities vary during uniform circular motion?
 - Speed
 - Velocity
 - Angular velocity
 - Both (2) & (3)
- In the graph given below, the rate of change of y w.r.t. x is
 - Increases continuously
 - Decreases continuously
 - Decreases and then becomes zero
 - Increases and then becomes zero
- Which of the following is/are not universal law(s)?
 - Conservation of mechanical energy
 - Conservation of mass
 - Conservation of charge
 - Both (1) & (2)



6. Starting from rest, a particle accelerates at the rate of 6 m/s^2 and then decelerates at the rate of 3 m/s^2 and finally comes to rest after travelling a distance of 16 m along a straight path. The maximum possible speed of the particle during its journey can be
- 8 m/s
 - 16 m/s
 - 12 m/s
 - 14 m/s
7. A uniformly accelerating train crosses a signal. If the engine passes the signal with velocity v and the middle of the train passes with a velocity $3v$, then the velocity with which end of the train will pass the signal is given by
- $\sqrt{10} v$
 - $9\sqrt{2} v$
 - $9 v$
 - $\sqrt{17} v$
8. A car is moving on a circular track at a speed of 20 m/s having radius 100 m . If it starts decelerating uniformly at the rate of 3 m/s^2 , the angle made by the resultant acceleration with the direction of its instantaneous velocity is
- 37°
 - 127°
 - 53°
 - 143°
9. An object is moving on a circular path of radius r with constant speed v . The average acceleration of the object, after it has travelled three and half rounds, is
- $\frac{2v^2}{\pi r}$
 - $\frac{4v^2}{3\pi r}$
 - $\frac{4v^2}{7\pi r}$
 - $\frac{2v^2}{7\pi r}$
10. The ideal gas equation is given by $PV = nRT$ (where P , V and T represent pressure, volume and temperature and n , R are constants). A graph plotted between pressure, temperature for a gas is given by



The correct volume relation is given by

- $V_1 < V_2 < V_3$
- $V_1 > V_2 > V_3$
- $V_1 = V_2 = V_3$
- $V_1 > V_2 < V_3$



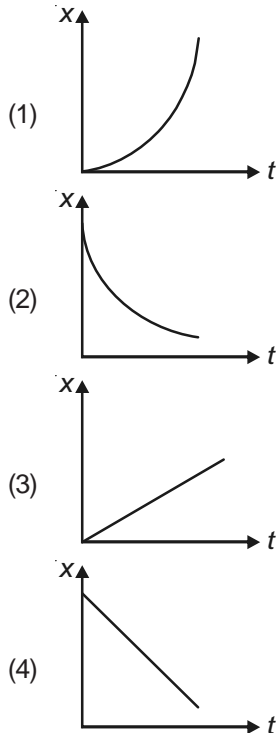
11. The equivalent capacitance for two capacitors connected in parallel is given by $C_{\text{eq}} = C_1 + C_2$. If $C_1 = (30 \pm 2) \mu\text{F}$ and $C_2 = (60 \pm 4) \mu\text{F}$, then the equivalent capacitance can be written as
- (1) $(90 \pm 6) \mu\text{F}$
 - (2) $(20 \pm 6) \mu\text{F}$
 - (3) $(20 \pm 1) \mu\text{F}$
 - (4) $(90 \pm 2) \mu\text{F}$
12. The equation of motion of a particle initially at rest is given as $x^3 = 8t$. The velocity of the particle at $t = 8 \text{ s}$
- (1) $-\frac{1}{6} \text{ m/s}$
 - (2) $\frac{1}{72} \text{ m/s}$
 - (3) $-\frac{1}{72} \text{ m/s}$
 - (4) $\frac{1}{6} \text{ m/s}$
13. A swimmer can swim in still water at a speed of 5 m/s and takes t_1 and t_2 time to cross a river in shortest time and shortest path respectively. If the speed of river increases, then time taken to cross the river in shortest time and shortest path be t'_1 and t'_2 respectively. Then
- (1) $t_1 < t'_1, t_2 < t'_2$
 - (2) $t_1 > t'_1, t_2 > t'_2$
 - (3) $t_1 = t'_1, t_2 < t'_2$
 - (4) $t_1 = t'_1, t_2 > t'_2$
14. Which of the following is not responsible for strong nuclear force?
- (1) Bosons
 - (2) Pions
 - (3) Quarks
 - (4) Gluons
15. A sprinkler is deployed to irrigate garden. The speed of water-jet from the sprinkler is u . The maximum area which can be irrigated by the sprinkler is
- (1) $\frac{\pi^2 u^2}{g}$
 - (2) $\frac{\pi u^2}{g}$
 - (3) $\frac{\pi u^2}{g^2}$
 - (4) $\frac{\pi u^4}{g^2}$



16. Which of the following is an appropriate expression for radius of curvature of a projectile at the highest point? ($R \rightarrow$ Range of projectile)

- (1) $\frac{R}{2} \cot \theta$
- (2) $\frac{R}{2} \tan \theta$
- (3) $2R \cot \theta$
- (4) $2R \tan \theta$

17. The motion of a particle is described as $a = 4v$. The $x-t$ graph for this motion is given by



18. From the top of a tower, if a ball is thrown upward with some speed, it reaches the ground in 9 s. If the ball is thrown vertically downward with same speed, it takes 4 s to reach the ground. What is the speed of ball just before touching the ground when dropped from the top of this tower?

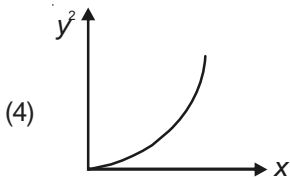
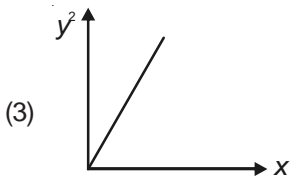
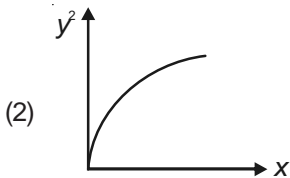
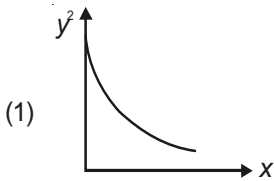
- (1) 44.2 m/s
- (2) 38.8 m/s
- (3) 59.2 m/s
- (4) 58.8 m/s

19. Which of the following does not represent the dimension of viscosity?

- (1) $\frac{\text{Pressure}}{\text{Velocity gradient}}$
- (2) Energy density \times time
- (3) $\frac{\text{Stress}}{\text{Strain rate}}$
- (4) $\frac{\text{Young's Modulus}}{\text{Temperature gradient}}$



20. Which of the following statement is incorrect?
- (1) A unitless quantity is always dimensionless
 - (2) A dimensionless quantity may be unitless
 - (3) Dimensional analysis can be always used to determine an incorrect equation
 - (4) Dimensional analysis is based on principle of homogeneity
21. Domains covered by physics is/are
- (1) Microscopic domain
 - (2) Mesoscopic domain
 - (3) Macroscopic domain
 - (4) All of these
22. Which of the following graphs correctly represents the equation $y = \sqrt{2x}$?

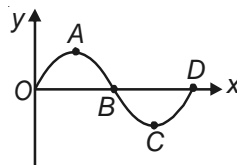


23. The mean value of $\int_0^\pi \sin \theta d\theta$ is

- (1) 1
 - (2) 2
 - (3) π
 - (4) $\frac{2}{\pi}$
24. If \vec{A} and \vec{B} are two vectors inclined to each other at angle θ , then component of \vec{A} perpendicular to \vec{B} and lying in the plane containing \vec{A} and \vec{B} is
- (1) $\frac{\vec{A} \cdot \vec{B}}{B^2} \vec{B}$
 - (2) $\vec{A} - \frac{\vec{A} \cdot \vec{B}}{B^2} \vec{B}$



- (3) $\vec{A} - \vec{B}$
 (4) $\vec{A} + \vec{B}$
25. If $|\vec{A}| \neq |\vec{B}|$ and $|\vec{A} \times \vec{B}| = |\vec{A} \cdot \vec{B}|$, then
 (1) $\vec{A} \perp \vec{B}$
 (2) $\vec{A} \parallel \vec{B}$
 (3) \vec{A} is antiparallel to \vec{B}
 (4) \vec{A} is inclined to \vec{B} at an angle of 45°
26. The velocity of a particle moving along y -axis is given by $\sqrt{v^2 + 2y} = 2$. The time after which the particle starts retracing its own path is
 (1) 1 s
 (2) 2 s
 (3) $\frac{1}{2}$ s
 (4) $\frac{1}{4}$ s
27. Which of the following is not an application of dimensional analysis?
 (1) Conversion of units
 (2) Deduction of numerical constants
 (3) Express basic quantities in terms of derived quantities
 (4) Choosing a new system of units
28. $\int_0^1 (2\cos^2 x - \cos 2x + 1) dx$ is equal to
 (1) 1
 (2) 2
 (3) 3
 (4) 0
29. The minimum value of $2\sin x + \cos x$ is
 (1) -2
 (2) 0
 (3) -3
 (4) $-\sqrt{5}$
30. At which point (s) the value of $\frac{dy}{dx} = 0$?



- (1) A
 (2) B
 (3) C
 (4) Both (1) & (3)



31. The coordinates of a particle moving in x - y plane vary with time following relation $y = A\sqrt{t}$, $x = \frac{B}{t}$. The locus of the particle is
- (1) Parabola
 - (2) Circle
 - (3) Ellipse
 - (4) Hyperbola
32. Which of the following is incorrect about the motion of a particle along x -axis?

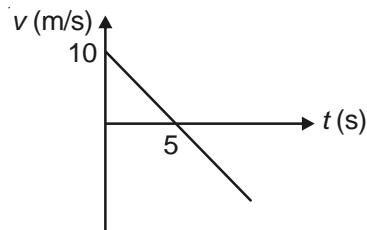
(1) $\frac{d^2x}{dt^2} > 0$, $\frac{dx}{dt} > 0$, $\Delta x > 0$

(2) $\frac{d^2x}{dt^2} < 0$, $\frac{dx}{dt} < 0$, $\Delta x < 0$

(3) $\frac{d^2x}{dt^2} > 0$, $\frac{dx}{dt} > 0$, $\Delta x < 0$

(4) $\frac{d^2x}{dt^2} > 0$, $\frac{dx}{dt} < 0$, $\Delta x < 0$

33. The equation for velocity - time graph shown below is



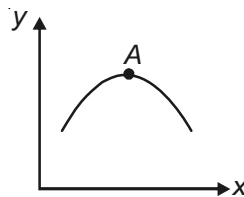
(1) $2v + t = 5$

(2) $v + 2t = 5$

(3) $2v + t = 10$

(4) $v + 2t = 10$

34. The value of $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at A is given by



(1) $\frac{dy}{dx} < 0$, $\frac{d^2y}{dx^2} = 0$

(2) $\frac{dy}{dx} > 0$, $\frac{d^2y}{dx^2} = 0$

(3) $\frac{dy}{dx} = 0$, $\frac{d^2y}{dx^2} > 0$

(4) $\frac{dy}{dx} = 0$, $\frac{d^2y}{dx^2} < 0$



35. If force, velocity and time have new units as 1 kN, 72 km/hr and 2 hrs, then new unit of mass in terms of given force, velocity and time will be
- (1) 3.6×10^6 kg
 - (2) 3.6×10^5 kg
 - (3) 1.44×10^6 kg
 - (4) 1.44×10^5 kg
36. In the given formula $F = kx_0 \sin(\omega t)$, the terms F , k , x_0 , ω and t stands for force, force constant, displacement, angular frequency and time, then the dimension of $\frac{F\omega}{k}$ is
- (1) $[M^0L^1T^1]$
 - (2) $[ML^{-1}T^{-2}]$
 - (3) $[M^0LT^{-2}]$
 - (4) $[M^0LT^{-1}]$
37. If t_1 represents the instant at which the instantaneous velocity becomes perpendicular to the direction of initial velocity during a projectile and t_2 represents the time after which the particle attains maximum height then $\sqrt{t_1 t_2}$ is
- (1) $\frac{u}{g}$
 - (2) $\frac{2u}{g}$
 - (3) $\frac{u}{2g}$
 - (4) $\frac{u \sin^2 \theta}{g}$
38. A park is in the shape of a regular hexagon. Six friends standing at each corner of the park start moving towards each other with same speed 2 m/s and meet each other after 60 s. The side of the park is
- (1) 120 m
 - (2) 30 m
 - (3) 240 m
 - (4) 60 m
39. Which of the following is correct?
- (1) Two physical quantities having the same dimension can always be added
 - (2) Precision always leads to accuracy
 - (3) A dimensionally correct equation is always correct
 - (4) If $z = A^a B^b$, then $\frac{\Delta z}{z}$ may not be equal to $a \frac{\Delta A}{A} + b \frac{\Delta B}{B}$
40. If ρ , v , d and η represent density, speed, diameter and coefficient of viscosity, then the physical quantity $\frac{\rho v d}{\eta}$ has the dimension of
- (1) $[M^0L^1T^0]$
 - (2) $[M^1L^0T^0]$
 - (3) $[M^0L^0T^1]$
 - (4) $[M^0L^0T^0]$



41. Starting from rest, if a car accelerates uniformly at the rate of 1 m/s^2 for some time and then decelerates uniformly at the rate of 2 m/s^2 and finally comes to rest after a journey of 1 minute. The maximum possible speed of the car during this journey is
- (1) 10 m/s
 - (2) 20 m/s
 - (3) 30 m/s
 - (4) 40 m/s
42. A ball is projected horizontally from a cliff 40 m high at a speed of 40 m/s and simultaneously a ball is dropped. If time taken by the two balls to reach the ground are t_1 and t_2 respectively (taking air friction into consideration), then
- (1) $t_1 > t_2$
 - (2) $t_1 < t_2$
 - (3) $t_1 = t_2$
 - (4) Depending on air friction t_1 may be less or more than t_2
43. Select the incorrect statement
- (1) It is possible to have $\left| \frac{d\vec{v}}{dt} \right| = 0$ but $\frac{d|\vec{v}|}{dt} \neq 0$
 - (2) It is possible to have $\left| \frac{d\vec{v}}{dt} \right| \neq 0$ but $\frac{d|\vec{v}|}{dt} = 0$
 - (3) It is possible to have $\left| \frac{d\vec{v}}{dt} \right| = 0$ and $\frac{d|\vec{v}|}{dt} = 0$
 - (4) It is possible to have $\left| \frac{d\vec{v}}{dt} \right| \neq 0$ and $\frac{d|\vec{v}|}{dt} \neq 0$
44. If \vec{R} is the resultant of two vectors \vec{A} and \vec{B} and \vec{R}' is the difference in them, and $|\vec{R}| = |\vec{R}'|$, then
- (1) $\vec{A} \parallel \vec{B}$
 - (2) $\vec{A} \perp \vec{B}$
 - (3) \vec{A} is antiparallel to \vec{B}
 - (4) \vec{A} makes an angle of 120° with \vec{B}
45. A projectile is fired horizontally from the top of a tower. The time after which the instantaneous velocity will be perpendicular to the initial velocity (neglect air resistance)
- (1) $t = \frac{u \sin \theta}{g}$
 - (2) $t = \frac{u}{g \sin \theta}$
 - (3) $t = \frac{u}{g \cos \theta}$
 - (4) It will never be perpendicular at any instant



[CHEMISTRY]

46. A metal oxide has the formula X_2O_3 . It can be reduced by hydrogen to give free metal and water. 0.2 g of metal oxide requires 5 mg of hydrogen for complete reduction. The atomic mass of metal in 'amu' is
- (1) 96
 - (2) 155
 - (3) 55
 - (4) 80
47. In a reaction, $4A + 2B + 3C \longrightarrow A_4B_2C_3$. What will be the number of moles of product formed, starting from 1 mole of A, 0.4 mole of B and 0.9 mole of C?
- (1) 0.25
 - (2) 0.20
 - (3) 0.30
 - (4) 2.32
48. 5 L N_2 and 5 L H_2 allowed to react, substance and its number of moles remains unreacted
- (1) N_2 : 0.149 mol
 - (2) H_2 : 0.149 mol
 - (3) H_2 : 0.074 mol
 - (4) N_2 : 0.669 mol
49. 40% (w/V) of NaCl solution (density = 1.14 g/ml) is equivalent to
- (1) 0.35×10^5 ppm
 - (2) 4×10^6 ppm
 - (3) 3.5×10^6 ppm
 - (4) 0.35×10^6 ppm
50. Number of electrons present in 7.2 mg of NH_4^+ is
- (1) 2.4×10^{20}
 - (2) 2.4×10^{21}
 - (3) 2×10^{18}
 - (4) 4×10^{20}
51. Loschmidt number is the number of
- (1) Molecules present in 1 ml of a gas at STP
 - (2) Atoms present in 1 ml of a gas at STP
 - (3) Atoms present in 1 gram mol of a gas at STP
 - (4) Molecules present in 1 gram mol of a gas at STP
52. Haemoglobin contains 0.5% iron by weight. The molecular weight of haemoglobin is 44800, then the number of iron atom per molecule of haemoglobin is
- (1) 6
 - (2) 4
 - (3) 8
 - (4) 12



53. At STP conditions 5 L of a gas weighs 9 g. Vapour density of gas is
- (1) 40.32
 - (2) 20.16
 - (3) 9
 - (4) 18
54. The equivalent mass of an element is 4. Its chloride has a vapour density 59.5, then the valency of the element is
- (1) 3
 - (2) 4
 - (3) 2
 - (4) 1
55. When a metal is burnt, its mass increases by 25%, then the equivalent mass of the metal will be
- (1) 8
 - (2) 32
 - (3) 28
 - (4) 25
56. In the reaction, $\text{ClO}_3^- + 6\text{H}^+ + 6\text{e}^- \rightarrow \text{Cl}^- + 3\text{H}_2\text{O}$ equivalent mass of ClO_3^- is
(M = formula weight of ClO_3^-)
- (1) $\frac{M}{6}$
 - (2) $\frac{M}{3}$
 - (3) $\frac{M}{5}$
 - (4) $\frac{M}{4}$
57. The percentage of carbon in CO and CO_2 are 42% and 27% respectively. These figures illustrate
- (1) Law of constant proportion
 - (2) Law of conservation of mass
 - (3) Law of reciprocal proportion
 - (4) Law of multiple proportion
58. Equal volume of 0.1 M AgNO_3 and 0.2 M NaCl are mixed. The concentration of NO_3^- ions in the mixture will be
- (1) 0.05 M
 - (2) 0.1 M
 - (3) 0.2 M
 - (4) 0.15 M
59. Which of the following is incorrectly matched? (M = molar mass)
- | Substance | Equivalent mass |
|--|-----------------|
| (1) CaCO_3 | M/2 |
| (2) $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ | M/3 |
| (3) NH_3 | M/3 |
| (4) H_3BO_3 | M |



60. 6.3 g hydrated oxalic acid dissolved in 200 ml of water to prepare a solution. 100 ml of this solution can be neutralized completely by (Mol. mass of oxalic acid = 126)
- (1) 50 ml of 2 N KOH
 - (2) 100 ml of 0.1 M NaOH
 - (3) 200 ml of 0.4 N KOH
 - (4) 100 ml of 0.1 M H_2SO_4
61. Oxygen exist in three isotopic form O^{16} (82%), O^{17} (10%) and O^{18} (8%). Average atomic mass of oxygen
- (1) 16.34
 - (2) 16.80
 - (3) 16.92
 - (4) 16.26
62. The normality of 0.4 M phosphorus acid (H_3PO_3) is
- (1) 0.8 N
 - (2) 0.4 N
 - (3) 0.1 N
 - (4) 1.2 N
63. Molar concentration of a solution in water is
- (1) Equal to molality of the solution
 - (2) More than molality of the solution
 - (3) Less than molality of the solution
 - (4) Always equal to normality of the solution
64. 200 ml of PH_3 when decomposed produces phosphorus and hydrogen. The change in volume is
- (1) 100 ml increase
 - (2) 50 ml decrease
 - (3) 50 ml increase
 - (4) 75 ml decrease
65. 3 g of silver carbonate on being strongly heated yields a residue weighing
- (1) 1.35 g
 - (2) 2.35 g
 - (3) 4.50 g
 - (4) 3.25 g
66. On dissolving 1 mol each of the following acids in 1 litre water the acid which gives a solution of 1 N strength is
- (1) $\text{H}_4\text{P}_2\text{O}_7$
 - (2) H_3PO_4
 - (3) H_3BO_3
 - (4) H_3PO_3
67. 10 ml hydrocarbon requires 55 ml oxygen for complete combustion and forms 40 ml CO_2 . Then the formula of hydrocarbon is
- (1) C_4H_8
 - (2) C_3H_8
 - (3) C_4H_6
 - (4) C_3H_4



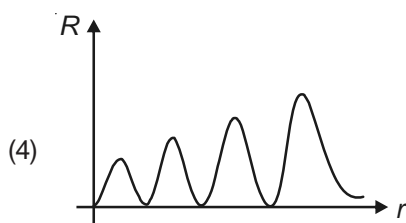
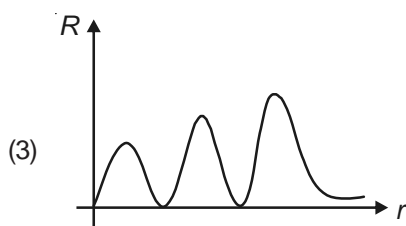
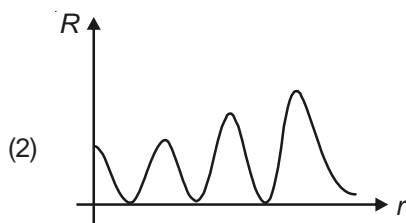
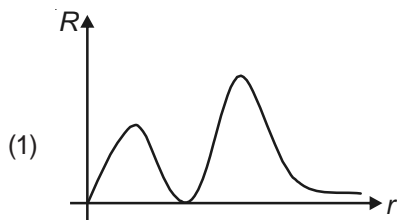
68. Which one of the following contains maximum number of atoms?
- (1) 100 cc of He at NTP
 - (2) 100 cc of N_2 at NTP
 - (3) 100 cc of SO_2 at NTP
 - (4) 100 cc of NH_3 at NTP
69. Which energy level in Li^{2+} has same energy as the fourth energy level of H-atom?
- (1) 12
 - (2) 6
 - (3) 4
 - (4) 3
70. Photoelectric effect is the phenomena in which
- (1) Photon comes out of the nucleus of an atom under the action of an electric field
 - (2) Photon comes out of a metal when it is hit by a beam of electrons
 - (3) Electrons are ejected from the metal with a constant velocity which depends on the frequency and intensity of incident radiation
 - (4) Electrons are ejected from the metal with different velocities which depends only on the frequency of the incident radiation, not on its intensity
71. Which will be the most stable among the following?
- (1) Fe^{2+}
 - (2) V^{2+}
 - (3) Fe^{3+}
 - (4) Fe^+
72. In an atom two electrons move around the nucleus in circular orbits of radii R and 4R. The ratio of the time taken by them to complete one revolution is
- (1) 8 : 7
 - (2) 1 : 8
 - (3) 4 : 1
 - (4) 1 : 4
73. Ionisation potential of hydrogen atom is 13.6 eV. Hydrogen atom in the ground state are excited by monochromatic light of energy 12.1 eV. The number of spectral lines emitted by hydrogen according to Bohr's theory will be
- (1) 2
 - (2) 4
 - (3) 1
 - (4) 3
74. Which value is closest to the wavelength in nanometer of a quantum of light with frequency of $8 \times 10^{15} \text{ s}^{-1}$?
- (1) 2×10^{-25}
 - (2) 5×10^{-18}
 - (3) 4×10^1
 - (4) 3×10^7



75. The number of electrons with the Azimuthal quantum number $l = 1$ and $l = 2$ in ground state of Cu are respectively
- (1) 12, 10
 - (2) 12, 7
 - (3) 10, 12
 - (4) 7, 12
76. The number of radial nodes of 4s and 3p orbitals are respectively
- (1) 1, 3
 - (2) 3, 1
 - (3) 4, 2
 - (4) 3, 2
77. Which of the following sets of quantum numbers represent the highest energy of subshell of an atom?
- (1) $n = 3, l = 1, m = 1, s = +\frac{1}{2}$
 - (2) $n = 4, l = 0, m = 0, s = +\frac{1}{2}$
 - (3) $n = 3, l = 0, m = 0, s = +\frac{1}{2}$
 - (4) $n = 4, l = 2, m = -2, s = +\frac{1}{2}$
78. The quantum numbers $+\frac{1}{2}$ and $-\frac{1}{2}$ for the electron spin represents
- (1) Two quantum mechanical states which have no classical analogue
 - (2) Magnetic moment of the electron pointing up and down respectively
 - (3) Rotation of the electron in anticlockwise and clockwise direction respectively
 - (4) Rotation of the electron in clockwise and anticlockwise direction respectively
79. Which of the following statement is wrong?
- (1) If the value of $l = 0$, the electron distribution is spherical
 - (2) Orbital angular momentum of 1s, 2s and 3s electrons are equal
 - (3) The shape of the orbital is given by Azimuthal quantum number
 - (4) In an atom, all electrons travel with the same velocity
80. Which of the following statement does not form a part of Bohr's model of hydrogen atom?
- (1) Energy of electron in the orbit is quantized
 - (2) The electron in the orbit nearest to the nucleus has the lower energy
 - (3) Angular momentum of the electron in the orbit is quantized
 - (4) The position and velocity of the electron in the orbit cannot be determined simultaneously
81. Which of the following is valid representation of electron?
- (1) Ψ_{333}
 - (2) Ψ_{323}
 - (3) Ψ_{321}
 - (4) Ψ_{312}



82. An ion Mn^{2+} has the magnetic moment equal to 4.9 B.M. The value of 'a' is
- (1) 2
 - (2) 5
 - (3) 3
 - (4) 4
83. Which of the following is the correct representation of plot of the radial function against the radial distance 'r' from the nucleus for an electron of 3s orbital?



84. If the shortest wavelength of H-atom in Lyman series is λ , then longest wavelength in Balmer series of He^+ ion is
- (1) $\frac{36\lambda}{5}$
 - (2) $\frac{\lambda}{4}$
 - (3) $\frac{5\lambda}{9}$
 - (4) $\frac{9\lambda}{5}$



85. Which of the following d -orbitals has electron density along all the three axes?
- (1) $3d_{yz}$
 - (2) $3d_{zx}$
 - (3) $3d_{xy}$
 - (4) $3d_{z^2}$
86. The respective value of orbital angular momentum of an electron in $1s$, $2s$, $3d$ and $3p$ orbitals are
- (1) $0, 1, \sqrt{6} \frac{h}{2\pi}, \sqrt{3} \frac{h}{2\pi}$
 - (2) $0, 0, \sqrt{20} \frac{h}{2\pi}, \sqrt{6} \frac{h}{2\pi}$
 - (3) $1, 1, \sqrt{4} \frac{h}{2}, \sqrt{2} \frac{h}{2}$
 - (4) $0, 0, \sqrt{6} \frac{h}{2\pi}, \sqrt{2} \frac{h}{2\pi}$
87. Among the following groups, which represents the collection of isoelectronic species?
- (1) $\text{NO}^+, \text{C}_2^{2-}, \text{O}_2^-, \text{CO}$
 - (2) $\text{N}_2, \text{C}_2^{2-}, \text{CO}, \text{NO}$
 - (3) $\text{CO}, \text{NO}^+, \text{CN}^-, \text{C}_2^{2-}$
 - (4) $\text{NO}, \text{CN}^-, \text{N}_2, \text{O}_2^-$
88. Which among the following is/are **correct** about chromium?
- (1) Its electronic configuration is $3d^5 4s^1$
 - (2) Total spin of chromium = 3
 - (3) Magnetic moment of chromium = $\sqrt{48}$
 - (4) All of these
89. Select the incorrect statement about the wave function ψ
- (1) ψ must be continuous
 - (2) ψ has physical significance
 - (3) ψ has no physical significance
 - (4) ψ^2 gives the probability of finding the electrons
90. Which of the following statement is **not correct**?
- (1) Magnetic quantum number may have +ve and -ve values including zero
 - (2) For Ag, $Z = 47$, spin quantum number for 24 electrons is $+\frac{1}{2}$ while for other 23 electrons is $-\frac{1}{2}$
 - (3) For H-atom energy of electron in different subshell of same shell is in the order of $s < p < d < f$
 - (4) For H-atom and hydrogen like species, the order of energy is $1s < 2s = 2p < 3s = 3p = 3d < 4s = 4p = 4d = 4f \dots$



[BIOLOGY]

91. Which of the following are twin characteristics of growth?
- (1) Increase in density and decrease in mass
 - (2) Increase in mass and decrease in volume
 - (3) Increase in volume and decrease in density
 - (4) Increase in mass and increase in number
92. Select the **incorrect** statement
- (1) A multicellular organism grows by cell division
 - (2) In plants growth by cell division occurs only up to a certain age
 - (3) In animals growth is definite
 - (4) Cell division occurs in certain tissues of animals to replace lost cells
93. Growth and reproduction are mutually exclusive events in
- (1) Unicellular organisms only
 - (2) Higher animals and lower plants
 - (3) Majority of higher animals and plants
 - (4) Some bacteria and lower animals
94. Scrapie disease in sheep is caused by
- (1) Nucleoprotein particles
 - (2) RNA particles
 - (3) Infectious protein particles
 - (4) DNA particles
95. Certain forest trees like pines, birches show stunted growth if their roots are not associated with
- (1) Virusoids
 - (2) Algae
 - (3) Viroids
 - (4) Fungi
96. Select **correct** match w.r.t. column I and column II
- | Column I | Column II |
|--|---------------------|
| a. Fungi | (i) Budding |
| b. <i>Planaria</i> | (ii) Fragmentation |
| c. Filamentous algae and protonema of mosses | (iii) Asexual spore |
| d. Yeast | (iv) Regeneration |
- (1) a(iii), b(i), c(iv), d(ii)
 - (2) a(ii), b(i), c(iv), d(iii)
 - (3) a(ii), b(iii), c(i), d(iv)
 - (4) a(iii), b(iv), c(ii), d(i)
97. The most obvious and technically complicated feature of all living organisms is
- (1) Consciousness
 - (2) Metabolism
 - (3) Reproduction
 - (4) Growth



98. Read the following statements:
- (A) All organisms are aware of their surroundings.
 - (B) Isolated metabolic reactions *in-vitro* are not living reactions.
- (1) Both (A) & (B) are correct
 - (2) Only (B) is correct
 - (3) Both (A) & (B) are incorrect
 - (4) Only (A) is correct
99. All living phenomena are due to underlying interactions. Properties of tissues are not present in the constituent cells, but arise as a
- (1) Result of interactions among the molecular components comprising the organelle
 - (2) Result of interactions among the organelles only
 - (3) Result of interactions among the constituent cells
 - (4) Result of interactions among the organelles and non-living cells
100. Which of the following pair of characters unexceptionally present in all living organisms and absent in non-living objects?
- (1) Consciousness, Reproduction
 - (2) Metabolism, Cellular organisation
 - (3) Growth, Reproduction
 - (4) Reproduction, Metabolism
101. The approximate number of plant species which have been scientifically named and classified is
- (1) 1.2 million
 - (2) 0.2 million
 - (3) 0.5 million
 - (4) 1.7 million
102. Nomenclature or naming of living organisms is only possible when the organism is described correctly and we know to what organism the name is attached to this is called
- (1) Classification
 - (2) Identification
 - (3) Taxonomy
 - (4) Systematics
103. Select **incorrect** statement w.r.t. Binomial nomenclature
- (1) Each biological name has two components - the generic name and the specific epithet
 - (2) Both words, when handwritten are separately underlined
 - (3) Biological names are generally in italics and written in Latin
 - (4) The first word starts with a capital letter
104. The process by which anything is grouped into convenient categories based on some easily observable characters, is known as
- (1) Phylogeny
 - (2) Nomenclature
 - (3) Identification
 - (4) Classification



105. Which one of the following represents autonym?
- (1) *Brassica oleracea capitata*
 - (2) *Acacia nilotica nilotica*
 - (3) *Hibiscus rosa-sinensis*
 - (4) *Acacia nilotica indica*
106. Linnaeus gave some principles of the binomial nomenclature in book
- (1) Philosophia Botanica
 - (2) Species Plantarum
 - (3) Systema Naturae
 - (4) Genera Plantarum
107. The number of obligate and intermediate categories which are used in taxonomic hierarchy, are respectively
- (1) 6 & 21
 - (2) 7 & 21
 - (3) 21 & 6
 - (4) 7 & 5
108. External and internal structure along with the structure of cell, development process and ecological informations of organism are essential and form the basis of
- (1) Old systematic studies
 - (2) Classical systematic studies
 - (3) Old taxonomic studies
 - (4) Modern taxonomic studies
109. Pathogen of small pox disease is
- (1) *Chlamydia*
 - (2) Obligate parasite
 - (3) *Mycoplasma*
 - (4) Facultative intracellular parasite
110. Which one of the following sequences is **correct** w.r.t. taxonomic hierarchy in ascending order?
- (1) Species → order → genus → family
 - (2) Genus → family → tribe → order
 - (3) Family → order → class → phylum
 - (4) Order → division → phylum → class
111. Term taxonomy was given by
- (1) A.P. de Candolle
 - (2) Santapau
 - (3) C. Linnaeus
 - (4) Theophrastus
112. Select **correct** statement w.r.t. systematics
- (1) It is the study of different kinds of organisms without their evolutionary relationships
 - (2) The word systematics is derived from the Greek word Systema
 - (3) It includes taxonomy as well as phylogeny
 - (4) It is a part of overall taxonomic arrangement that include identification only



113. Biological concept of species was given by ____ and it is based on ____.

- (1) Ernst Mayr, fixity of species
- (2) John Ray, fixity of species
- (3) Ernst Mayr, reproductive isolation
- (4) Carolus Linnaeus, reproductive isolation

114. Select the correct option w.r.t. Polytypic genus

- (1) *Panthera*
- (2) *Brassica*
- (3) *Solanum*
- (4) More than one option is correct

115. Select odd one w.r.t. family

- (1) Muscidae
- (2) Felidae
- (3) Anacardiaceae
- (4) Diptera

116. Select **correct** match w.r.t. column I and column II

Column I

Column II

- | | |
|-------------|--------------------|
| a. Division | (i) Primata |
| b. Class | (ii) Poaceae |
| c. Order | (iii) Angiospermae |
| d. Family | (iv) Insecta |

- (1) a(iii), b(iv), c(ii), d(i)
- (2) a(iii), b(iv), c(i), d(ii)
- (3) a(i), b(iv), c(ii), d(iii)
- (4) a(iv), b(iii), c(ii), d(i)

117. Read the following statements :

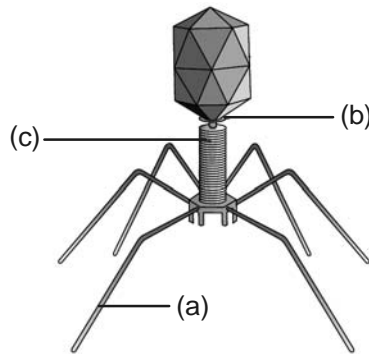
- (A) As we go higher from species to kingdom, the number of common characteristics goes on decreasing.
 - (B) Lower the taxa, less are the characteristics that the members within the taxon share.
 - (C) Higher the category, greater is the difficulty of determining the relationship to other taxa at the same level.
- (1) Only (A) is correct
 - (2) (B) and (C) are correct
 - (3) (A) and (B) are correct
 - (4) (A) and (C) are correct

118. Category 'Family' has a group of related genera with still less number of similarities as compared to

- (1) Order and class
- (2) Class and division
- (3) Phylum and kingdom
- (4) Genus and species



119. Taxonomic studies consider a group of individual organisms with fundamental similarities as a
- (1) Phylum
 - (2) Order
 - (3) Species
 - (4) Genus
120. Given below is the diagram of a virus. In which of the following all the three parts labelled as (a), (b) and (c) are correctly identified?



- (1) (a) Flagella, (b) Collar, (c) Sheath
 - (2) (a) Cilia, (b) Plate, (c) Tail
 - (3) (a) Tail fibres, (b) Collar, (c) Sheath
 - (4) (a) Tail fibres, (b) Head, (c) Capsid
121. Which of the following taxonomical aids serve as quick referral systems in taxonomical studies?
- (1) Zoological parks
 - (2) Botanical gardens
 - (3) Museum
 - (4) Herbarium
122. The international size of herbarium sheet is
- (1) 31 × 19 cm
 - (2) 21 × 29 cm
 - (3) 41 × 29 cm
 - (4) 26 × 45 cm
123. Read the following statements :
- (A) Herbarium sheets are arranged according to a universally accepted system of classification.
 (B) Herbarium is a store house of conserved animal specimens.
- (1) Both (A) & (B) are incorrect
 - (2) Only (A) is correct
 - (3) Both (A) & (B) are correct
 - (4) Only (B) is correct
124. Select the **correct** statement w.r.t. taxonomic key
- (1) It is used for identification of plants only
 - (2) Each statement in the key is called couplet
 - (3) It is based on similarities and dissimilarities
 - (4) Similar taxonomic keys are required for each taxonomic category such as family, genus and species



125. Taxonomical aid which is analytical in nature is ____ A ____ and concept given by ____ B ____.
- (1) (A) Monograph, (B) J.D. Hooker
 - (2) (A) Museum, (B) Caspar Bauhin
 - (3) (A) Key, (B) Tournefort
 - (4) (A) Key, (B) John Ray
126. Biological museums are generally set up in educational institutes such as schools and colleges and they have collections of
- (1) Conserved plant specimens only
 - (2) Living plant and animal specimens
 - (3) Preserved plant specimens only
 - (4) Preserved plant and animal specimens
127. National Museum of Natural History is situated at
- (1) Delhi
 - (2) London
 - (3) Kolkata
 - (4) Lucknow
128. Breeding of rare fauna and *ex-situ* conservation can be done in
- (1) Botanical gardens
 - (2) Botanical gardens and Museums
 - (3) Zoological parks
 - (4) Museums and Zoological parks
129. Which of the following is useful in providing information for identification of names of species found in an area?
- (1) Flora
 - (2) Manuals
 - (3) Monographs
 - (4) Catalogues
130. Flora contains the actual account of habitat and distribution of plants of a given area. It
- (1) Contains information on any one taxon
 - (2) Is analytical in nature and based on couplets
 - (3) Provides index to the plant species found in a particular area
 - (4) Includes alphabetical arrangements of species describing their features
131. Who was the earliest to attempt a more scientific basis for classification?
- (1) Copeland
 - (2) R.H. Whittaker
 - (3) Aristotle
 - (4) Carl Woese
132. Two kingdom system of classification could not distinguish between
- (1) Prokaryotes and eukaryotes
 - (2) Unicellular and multicellular organisms
 - (3) Photosynthetic and non-photosynthetic organisms
 - (4) More than one option is correct



133. In two kingdom system of classification, bacteria were placed in
- (1) Plantae
 - (2) Animalia
 - (3) Protista
 - (4) Monera
134. Three kingdom system of classification was proposed by Haeckel and he created a new kingdom called as
- (1) Mychota
 - (2) Fungi
 - (3) Protista
 - (4) Plantae
135. Which of the following is not a criteria of five kingdom system of classification?
- (1) Reproduction
 - (2) Types of reserve food
 - (3) Complexity of cell structure
 - (4) Complexity of body organisation
136. In five kingdom system of classification *Paramoecium* and *Amoeba* were placed in
- (1) Protozoa
 - (2) Monera
 - (3) Protista
 - (4) Plantae
137. How many kingdoms include heterotrophic members in five kingdom classification system?
- (1) 2
 - (2) 3
 - (3) 1
 - (4) 4
138. Select the **incorrect** statement w.r.t. charecteristics of five kingdoms in Whittaker system
- (1) Organisms belong to Monera are prokaryotic and have non-cellulosic cell wall
 - (2) Organisms belong to Plantae have cellulosic cell wall with tissue/organ grade of body organisation
 - (3) Autotrophic members are included in two kingdoms only
 - (4) Chemosynthetic autotrophic mode of nutrition is found in Monera
139. Three domains of life were given on the basis of
- (1) Sequence of tRNA genes
 - (2) Presence or absence of branched chain of lipid in cell membrane
 - (3) Mode of nutrition
 - (4) 16 S-rRNA base sequencing
140. In five kingdom system of classification eukaryotic, heterotrophic multicellular with loose tissue level of body organization were grouped under the kingdom
- (1) Monera
 - (2) Protista
 - (3) Fungi
 - (4) Plantae



141. Select **incorrect** statement w.r.t. bacteria

- (1) They are the most abundant microorganisms
- (2) Very simple in structure
- (3) They as a group show the most extensive metabolic diversity
- (4) They are very simple in behaviour

142. Match the column I with column II

Column I (Shapes)

Column II (Bacteria)

- | | |
|--------------|-----------------------|
| a. Spherical | (i) Bacilli |
| b. Rod | (ii) <i>Spirillum</i> |
| c. Comma | (iii) Cocci |
| d. Spiral | (iv) <i>Vibrio</i> |

- (1) a(iii), b(i), c(iv), d(ii)
- (2) a(i), b(iii), c(iv), d(ii)
- (3) a(iv), b(i), c(iii), d(ii)
- (4) a(ii), b(iii), c(iv), d(i)

143. Which of the following is example of pleomorphic bacteria?

- (1) *Diplococcus pneumoniae*
- (2) *Rhodospirillum rubrum*
- (3) *Caulobacter*
- (4) *Rhizobium leguminosarum*

144. Select odd one w.r.t. amino acids of tetrapeptide found in Gram negative bacteria

- (1) D-alanine
- (2) L-alanine
- (3) D-glutamic acid
- (4) L-lysine

145. The cell wall of almost all the eubacteria is made up of

- (1) Mucopolysaccharide
- (2) Cellulose
- (3) Chitin
- (4) Pseudomurein

146. Which of the following is an example of peritrichous bacteria?

- (1) *Pseudomonas fluorescens*
- (2) *Lactobacillus*
- (3) *Spirillum volutans*
- (4) *Escherichia*

147. Select the **correct** statement w.r.t. Gram positive bacteria

- (1) Cell wall is not sensitive to penicillin
- (2) These are mostly capsulated
- (3) Teichoic acid is present in cell wall
- (4) Pili are very common



148. The cytoplasm of bacteria appears granular due to the presence of
- (1) 80S ribosomes
 - (2) Chromatophores
 - (3) 70S ribosomes
 - (4) Genophore
149. _____ respire anaerobically only and the growth of this bacteria will certainly be slower as compare to aerobic bacteria.
- (1) *Bacillus subtilis*
 - (2) *Chlorobium*
 - (3) *Pseudomonas*
 - (4) *Clostridium*
150. Which of the following bacteria use H_2S as electron and H^+ donor during photosynthesis?
- (1) Purple sulphur bacteria
 - (2) Green sulphur bacteria
 - (3) Purple non-sulphur bacteria
 - (4) Green non-sulphur bacteria
151. Generation time of a bacteria is 20 minutes. If initially there were 50 cells in the culture medium, then what will be the number of cells after 2 hours?
- (1) 2400
 - (2) 3200
 - (3) 3000
 - (4) 2560
152. Anticoagulant Ca-DPA is present in
- (1) Exosporium of endospore
 - (2) Cell wall of Gram negative bacteria
 - (3) Cortex of endospore
 - (4) Cell membrane of Gram positive bacteria
153. Select **correct** statement w.r.t. extra chromosomal DNA of bacteria
- (1) It is always found as the part of nucleoid
 - (2) It is always longer than nucleoid DNA
 - (3) It may provide resistance for antibiotics
 - (4) Its genes have vital role in viability and growth of bacteria
154. Genetic recombination in bacteria in which transfer of genetic material from one bacterium to another bacterium occurs with the help of surrounding medium, is known as
- (1) Transduction
 - (2) Binary fission
 - (3) Transformation
 - (4) Conjugation



155. Select **correct** match w.r.t. column I and column II.

Column I (Beneficial activities)

- a. Retting of fibres
- b. Curing of tea leaves
- c. Degradation of petroleum wastes
- d. Bacitracin antibiotic

Column II (Bacteria)

- (i) *Bacillus licheniformis*
- (ii) *Pseudomonas putida*
- (iii) *Micrococcus candidans*
- (iv) *Clostridium perfringens*

- (1) a(iii), b(i), c(ii), d(iv)
- (2) a(iii), b(iv), c(ii), d(i)
- (3) a(iv), b(iii), c(ii), d(i)
- (4) a(iv), b(i), c(iii), d(ii)

156. Bacterial blight of rice is caused by

- (1) *Xanthomonas oryzae*
- (2) *Xanthomonas citri*
- (3) *Clostridium botulinum*
- (4) *Agrobacterium tumefaciens*

157. Which of the following feature of archaebacteria is responsible for their survival in extreme conditions?

- (1) Presence of exons in DNA
- (2) Presence of histone proteins and circular RNA
- (3) Presence of 70S ribosomes
- (4) Different cell wall structure from other bacteria

158. Select **correct** statement w.r.t. Halophiles

- (1) They are capable of tolerating high acidity
- (2) They are obligate anaerobes occurring in high salt concentration medium
- (3) They oxidise sulphuric acid to sulphur under aerobic conditions
- (4) In high light intensity, a reddish pigment bacteriorhodopsin develop in their membrane to trap sunlight to produce ATP

159. Out of the given statements how many of them are **correct** for heterocyst?

- a. Found in blue green algae
 - b. Specialised cells for N_2 fixation
 - c. Sometimes help in sexual reproduction and photosynthesis
 - d. Wall is impermeable to oxygen
- (1) Two
 - (2) Three
 - (3) Four
 - (4) One

160. Which of the following cyanobacteria fixes N_2 non-symbiotically in rice fields?

- (1) *Frankia* and *Aulosira*
- (2) *Rhizobium* and *Oscillatoria*
- (3) *Tolypothrix* and *Aulosira*
- (4) *Nostoc* and *Nitrocystis*



161. The organisms which completely lack a cell wall and can survive without oxygen are
- (1) *Mycoplasma*
 - (2) Diatoms
 - (3) Cyanobacteria
 - (4) Dinoflagellates
162. In Whittaker system, the boundaries of which of the following kingdom is not well defined?
- (1) Monera
 - (2) Protista
 - (3) Fungi
 - (4) Animalia
163. Which of the following feature is **not** concerned with chrysophytes?
- (1) They are microscopic and float passively in water currents
 - (2) The walls are embedded with pectin and thus walls are indestructible
 - (3) They form diatomaceous earth
 - (4) Diatoms are the chief producers in the oceans
164. Dinoflagellates are characterised by all, **except**
- (1) The cell wall has stiff cellulose plates on the outer surface
 - (2) The cell walls form two thin overlapping shells, which fit together as in a soap box
 - (3) Most of them has one longitudinal and other transverse flagellum
 - (4) Photosynthetic pigments are chlorophyll a, c and α -carotenes
165. Select **incorrect** statement w.r.t. Euglenoids
- (1) They are photosynthetic in sunlight and behave like heterotrophs in absence of light
 - (2) The pigments are identical to those present in higher plants
 - (3) They have protein rich cell wall made up of pellicle
 - (4) The reserve food material is in the form of paramylon
166. In the life cycle of acellular slime moulds
- (1) Spores are walled
 - (2) Somatic stage is haploid plasmodium
 - (3) Spores are dispersed by biotic agents
 - (4) Macrocyt represents site of karyogamy and meiosis
167. White spots seen on mustard leaves are due to a parasitic fungus known as
- (1) *Puccinia graminis*
 - (2) *Phytophthora infestans*
 - (3) *Albugo candida*
 - (4) *Mucor mucedo*
168. In fungi, asexual reproduction takes place by
- (1) Fission, conidia and ascospores
 - (2) Conidia, hyphospores and zoospores
 - (3) Conidia, sporangiospores and zoospores
 - (4) Sporangiospores, conidia and basidiospores



169. Select **incorrect** statement w.r.t. fungi
- (1) Mycelium is consist of long slender thread like structures called hyphae
 - (2) Aseptate and multinucleate hyphae is called coenocytic hyphae
 - (3) Dolipore septum is characteristic of class ascomycetes
 - (4) The cell wall is composed of chitin and polysaccharides
170. Which of the following is **not** form the basis of classification in fungi?
- (1) Morphology of mycelium
 - (2) Mode of spore formation
 - (3) Mode of nutrition
 - (4) Fruiting bodies
171. Members of Ascomycetes
- (1) Are found in aquatic habitats and on decaying wood or as obligate parasites on plant
 - (2) Asexually reproduce by zoospores
 - (3) Sexual reproduction takes place by planogametic copulation only
 - (4) Represent dikaryophase which is a short phase of life cycle
172. Select **correct** match w.r.t. column I and column II
- | Column I | Column II |
|-----------------------|---------------------|
| a. <i>Albugo</i> | (i) Basidiomycetes |
| b. <i>Penicillium</i> | (ii) Deuteromycetes |
| c. <i>Ustilago</i> | (iii) Ascomycetes |
| d. <i>Trichoderma</i> | (iv) Oomycetes |
- (1) a(iii), b(ii), c(iv), d(i)
 - (2) a(iv), b(iii), c(ii), d(i)
 - (3) a(iii), b(i), c(iv), d(ii)
 - (4) a(iv), b(iii), c(i), d(ii)
173. Which of the following statement is **correct** for deuteromycetes?
- (1) A large number of them are decomposers of litter, but do not help in mineral cycling
 - (2) Mycelium is septate and branched
 - (3) They may have three names, one for vegetative stage and two for asexual stage
 - (4) Common asexual spore is oidia
174. Select **odd** one w.r.t. Basidiomycetes
- (1) Mushroom
 - (2) Smut
 - (3) Rust
 - (4) Morels
175. Which of the following fungus is used extensively in biochemical and genetic work?
- (1) *Aspergillus*
 - (2) *Colletotrichum*
 - (3) *Neurospora*
 - (4) *Claviceps*



176. The viruses are non-cellular organisms that are characterised by
- (1) Having both DNA and RNA
 - (2) Having capsid made up of murein
 - (3) Having an inert crystalline structure outside the living cell
 - (4) Only double stranded DNA and single stranded RNA
177. Select **odd** one w.r.t. disease symptoms by viruses
- (1) Yellowing and vein clearing
 - (2) Leaf rolling and curling
 - (3) Mosaic formation
 - (4) Root galls
178. Which of the following character is not related with infectious agent that discovered by T. O. Diener?
- (1) It was found to be a free RNA
 - (2) It lacked the protein coat
 - (3) It was larger than viruses
 - (4) Its RNA was of low molecular weight
179. Lichens do not grow in polluted areas and are very good pollution indicator of
- (1) Radioactive pollution
 - (2) Sewage pollution
 - (3) SO₂ pollution
 - (4) Soil pollution
180. Mycobiont component of lichen provides
- (1) Water and food materials to phycobiont
 - (2) Organic food to its partner
 - (3) Shelter to algal partner
 - (4) More than one option is correct

