

TEST - 5**ANSWERS**

1. (1)	41. (3)	81. (2)	121. (2)	161. (1)
2. (2)	42. (2)	82. (3)	122. (4)	162. (3)
3. (3)	43. (3)	83. (1)	123. (1)	163. (4)
4. (4)	44. (4)	84. (2)	124. (1)	164. (2)
5. (3)	45. (4)	85. (1)	125. (3)	165. (3)
6. (2)	46. (3)	86. (1)	126. (3)	166. (4)
7. (3)	47. (3)	87. (4)	127. (3)	167. (1)
8. (2)	48. (1)	88. (2)	128. (1)	168. (3)
9. (1)	49. (3)	89. (4)	129. (1)	169. (3)
10. (4)	50. (1)	90. (3)	130. (4)	170. (1)
11. (2)	51. (1)	91. (4)	131. (2)	171. (3)
12. (3)	52. (4)	92. (3)	132. (1)	172. (1)
13. (1)	53. (3)	93. (4)	133. (4)	173. (3)
14. (1)	54. (3)	94. (3)	134. (1)	174. (2)
15. (1)	55. (4)	95. (1)	135. (2)	175. (4)
16. (3)	56. (1)	96. (1)	136. (1)	176. (3)
17. (1)	57. (3)	97. (1)	137. (2)	177. (2)
18. (2)	58. (3)	98. (1)	138. (2)	178. (4)
19. (2)	59. (4)	99. (4)	139. (4)	179. (4)
20. (2)	60. (3)	100. (3)	140. (1)	180. (1)
21. (4)	61. (3)	101. (2)	141. (4)	181. (1)
22. (1)	62. (2)	102. (1)	142. (4)	182. (2)
23. (2)	63. (3)	103. (2)	143. (1)	183. (2)
24. (3)	64. (3)	104. (2)	144. (3)	184. (3)
25. (4)	65. (4)	105. (1)	145. (2)	185. (4)
26. (1)	66. (4)	106. (3)	146. (2)	186. (2)
27. (1)	67. (3)	107. (2)	147. (3)	187. (3)
28. (2)	68. (2)	108. (3)	148. (3)	188. (2)
29. (4)	69. (1)	109. (4)	149. (4)	189. (4)
30. (1)	70. (4)	110. (4)	150. (3)	190. (4)
31. (2)	71. (4)	111. (1)	151. (3)	191. (1)
32. (1)	72. (3)	112. (3)	152. (3)	192. (1)
33. (2)	73. (4)	113. (1)	153. (4)	193. (3)
34. (4)	74. (3)	114. (3)	154. (4)	194. (3)
35. (2)	75. (1)	115. (4)	155. (4)	195. (4)
36. (3)	76. (3)	116. (1)	156. (3)	196. (2)
37. (1)	77. (2)	117. (4)	157. (4)	197. (1)
38. (4)	78. (2)	118. (1)	158. (1)	198. (4)
39. (4)	79. (2)	119. (2)	159. (2)	199. (3)
40. (1)	80. (2)	120. (1)	160. (3)	200. (2)



Hints to Selected Questions

[PHYSICS]

1. Answer (1)

$$g' = g_p - R\omega^2 \cos^2 \lambda$$

2. Answer (2)

$$\rho = \frac{3M}{4\pi R^3} \Rightarrow \frac{\rho_s}{\rho_e} = 3.3 \times 10^{-4}$$

3. Answer (3)

4. Answer (4)

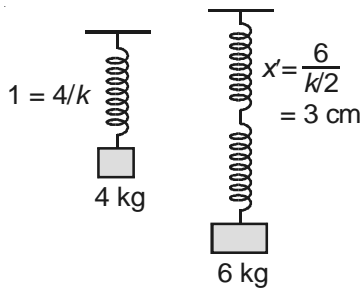
$$\Delta L \propto \frac{1}{D^2}$$

5. Answer (3)

$$F = mg' = mg \left(1 - \frac{d}{R}\right) = \frac{GMmr}{R^3}$$

6. Answer (2)

7. Answer (3)



8. Answer (2)

$$v = -\int_{\infty}^x E dx = -\int_{\infty}^x \frac{C}{x^2} dx = \frac{C}{x}$$

9. Answer (1)

Pressure is independent of area of cross-section.

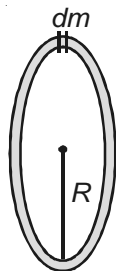
10. Answer (4)

$$v = \frac{2 R^2 (\rho - \rho_0) g}{9 \eta}$$

11. Answer (2)

No force due to outer shell.

12. Answer (3)



Field being vector is zero.

$$dV = -\frac{Gdm}{R} \Rightarrow v = \frac{-GM}{R}$$

13. Answer (1)

$$\frac{A}{T} = \frac{L}{2m}$$

14. Answer (1)

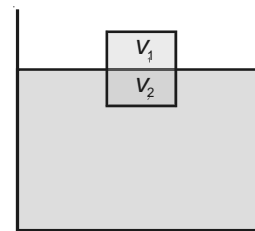
$$\Delta L \propto F \Rightarrow \frac{\Delta L_1}{\Delta L_2} = \frac{F_1}{F_2} = \frac{\text{Weight}}{\text{Weight} - \text{Upthrust}}$$

$$\Rightarrow \frac{2}{1.4} = \frac{V\rho g}{V\rho g - V\rho_w g} \Rightarrow \rho = \frac{2}{0.6} \rho_w = 3333 \text{ kg/m}^3$$

15. Answer (1)

$$\Delta L = \frac{FL}{AY} \Rightarrow \Delta L \propto \frac{F}{A} \Rightarrow \frac{\text{Load}}{\Delta L} \propto r^2$$

16. Answer (3)



$$\frac{V_1}{V_1 + V_2} = \frac{\rho_w - \rho_{\text{ice}}}{\rho_w} = 10\%$$

17. Answer (1)

$$B = \frac{\Delta P}{\Delta V/V} = \frac{10^7}{\frac{0.4 \times 10^{-6}}{1000 \times 10^{-6}}} = 2.5 \times 10^{10} \text{ N/m}^2$$

18. Answer (2)

V is 8 times $\Rightarrow r' = 2r$

$$\therefore v_T \propto r^2 = 4v_0$$

19. Answer (2)

$L = 400 \text{ cm}$, $r = 0.25 \text{ cm}$,

$F = 5 \text{ kg wt} = 5000 \text{ g wt} = 5000 \times 980 \text{ dyne}$

$$Y = \frac{FL}{\pi r^2 \Delta L} \Rightarrow \Delta L = 0.0041 \text{ cm}$$



20. Answer (2)

$$B = -\frac{\Delta p v}{\Delta v}$$

$$\Rightarrow \Delta p = -\frac{B \Delta v}{v} = 2100 \text{ kPa} \times \frac{0.004}{100} = 84 \text{ Pa}$$

21. Answer (4)

22. Answer (1)

23. Answer (2)

24. Answer (3)

$$g' = g - R\omega^2 = 0$$

$$\omega = \sqrt{\frac{g}{R}}$$

$$\therefore K = \frac{1}{2} \times \frac{2}{5} MR^2 \times \omega^2 = \frac{MgR}{5}$$

25. Answer (4)

$$K = \frac{GMm}{2r}, U = \frac{-GMm}{r}, E = \frac{-GMm}{2r}$$

If r is decreased, K will increase but U and E will decrease.

26. Answer (1)

In coal mine and top of mountain, g decreases.

27. Answer (1)

28. Answer (2)

$$t_1 = \frac{A}{a} \sqrt{\frac{H}{g}} (\sqrt{2} - 1) \text{ and } t_2 = \frac{A}{a} \sqrt{\frac{H}{g}}$$

\therefore Initially the pressure is high and the liquid comes out with greater speed.

29. Answer (4)

Check dimensions else,

$$\Delta V = V_w - V_e = \frac{m}{y} - \frac{m}{x}$$

30. Answer (1)

$$\text{Energy density} = \frac{(\text{Stress})^2}{2Y}$$

$$\text{Energy density} \propto \frac{1}{A^2}$$

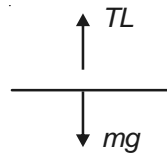
31. Answer (2)

$$v = R \sqrt{\frac{g}{R+h}} = R \sqrt{\frac{g}{7R}} = 3.08 \text{ km/s}$$

32. Answer (1)

$$h \propto \frac{1}{R}$$

33. Answer (2)



A film has two surfaces.

34. Answer (4)

Surface tension decreases with rise in temperature.

35. Answer (2)

$$r = 0.3 \times 10^{-3} \text{ m}, v = 1 \text{ m/s}, \eta = 18 \times 10^{-6} \text{ decapoise}$$

$$F = 6\pi\eta r v = 6 \times \frac{22}{7} \times 18 \times 10^{-6} \times 0.3 \times 10^{-3} \times 1$$

$$= 1.018 \times 10^{-7} \text{ N}$$

36. Answer (3)

Due to buoyant force reading of A will decrease and due to its reaction force that of B increase.

37. Answer (1)

$$g' = \frac{G \times 4m}{R^2} = 4g = 40 \text{ m/s}^2$$

$$\therefore W = mg'h = 160 \text{ J}$$

38. Answer (4)

$v < v_e$ so the object will stop at a definite height.

39. Answer (4)

$$Y = \frac{F/A}{\text{Breaking strain}} \Rightarrow A = \frac{F}{Y \times \text{Breaking strain}}$$

$$= \frac{10^4 \times 100}{7 \times 10 \times 0.2} = 7.1 \times 10^{-4} \text{ m}^2$$

40. Answer (1)

$$\begin{aligned} \text{Weight of man} &= \text{weight of water displaced} \\ &= \text{volume} \times \text{density} \\ &= 3 \times 2 \times \frac{1}{100} \times 10^3 = 60 \text{ kg} \end{aligned}$$

41. Answer (3)

As inside it gravitational field is zero.

42. Answer (2)

$$B = \frac{p}{\Delta V/V} \Rightarrow \frac{1}{B} = \frac{\Delta V/V}{p} \Rightarrow \sigma = \frac{\Delta V}{pV} \Rightarrow \Delta V = \sigma pV$$

43. Answer (3)

44. Answer (4)



45. Answer (4)

$$v = - \left[\frac{Gm}{1} + \frac{Gm}{2} + \frac{Gm}{4} + \frac{Gm}{8} \dots \right] \times 2 = -4G$$

46. Answer (3)

47. Answer (3)

48. Answer (1)

49. Answer (3)

50. Answer (1)

[CHEMISTRY]

51. Answer (1)

52. Answer (4)

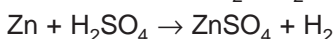
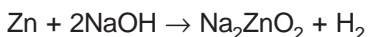
In ClO_4^- , Cl has highest O.N. = +7

53. Answer (3)

54. Answer (3)

55. Answer (4)

56. Answer (1)



57. Answer (3)

58. Answer (3)

At room temperature ortho hydrogen is 75% and para hydrogen is 25%.

59. Answer (4)

60. Answer (3)

Elements of groups 7th, 8th and 9th do not form hydrides.

61. Answer (3)

62. Answer (2)

63. Answer (3)

Temporary as well as permanent hardness, both can be removed by using synthetic organic ion exchange resins.

64. Answer (3)

65. Answer (4)

66. Answer (4)

67. Answer (3)

68. Answer (2)

Na metal is kept in kerosene oil.

69. Answer (1)

70. Answer (4)

71. Answer (4)

72. Answer (3)

73. Answer (4)

74. Answer (3)

Only NaHCO_3 , KHCO_3 , RbHCO_3 and CsHCO_3 are available in solid state.

75. Answer (1)

76. Answer (3)

77. Answer (2)

78. Answer (2)

79. Answer (2)

80. Answer (2)

81. Answer (2)

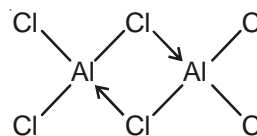
82. Answer (3)

 $\text{B}_3\text{N}_3\text{H}_6$ and C_6H_6 both have 42 electrons and 12 atoms in each case.

83. Answer (1)

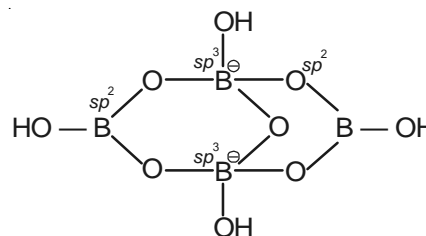
84. Answer (2)

Al forms 4-bonds



85. Answer (1)

86. Answer (1)



87. Answer (4)

88. Answer (2)

89. Answer (4)

90. Answer (3)

91. Answer (4)

92. Answer (3)

93. Answer (4)

94. Answer (3)

95. Answer (1)

96. Answer (1)

97. Answer (1)

98. Answer (1)

99. Answer (4)

100. Answer (3)



[BIOLOGY]

101. Answer (2)
G₀ is also called quiescent stage.
102. Answer (1)
103. Answer (2)
Duration of cell cycle varies in different cell types.
104. Answer (2)
105. Answer (1)
S phase is longer than G₂.
106. Answer (3)
Growing regions and storage organs of the plant.
107. Answer (2)
Duplication of centriole occurs in S-phase.
108. Answer (3)
S-phase is also called invisible phase.
109. Answer (4)
CDKs are ATP dependent.
110. Answer (4)
Chalones are mitotic poison.
111. Answer (1)
Centromere splits in anaphase.
112. Answer (3)
Both haploid and diploid cells may show mitosis in plants.
113. Answer (1)
114. Answer (3)
115. Answer (4)
Usually positive.
116. Answer (1)
Chromosome number does not double like the amount of DNA in interphase.
117. Answer (4)
118. Answer (1)
119. Answer (2)
120. Answer (1)
121. Answer (2)
$$n + \frac{n}{4}$$

$$\therefore 16 + \frac{16}{4} = 20$$
122. Answer (4)
123. Answer (1)
124. Answer (1)
For a solution at atmospheric pressure, Ψ_s is equal to Ψ_w .
125. Answer (3)
126. Answer (3)
Unloading of sugar from phloem sap to the sink is active process.
127. Answer (3)
128. Answer (1)
Apoplastic pathway does not have protoplasm hence, least resistance.
129. Answer (1)
130. Answer (4)
Guttated water has both inorganic and organic substances.
131. Answer (2)
132. Answer (1)
Water moves from high Ψ_w to low Ψ_w .
133. Answer (4)
NaCl is ionising solution so more negative Ψ_s .
134. Answer (1)
Microspore (n) = 10
 \therefore Microspore mother cell (2n) = 20
DNA in microspore = 15 Pg
 \therefore In G₂ stage = 15 × 4 = 60 Pg
In G₁ stage = 30 Pg
135. Answer (2)
PEP is first carboxylated to OAA then OAA is reduced to malic acid.
136. Answer (1)
137. Answer (2)
138. Answer (2)
139. Answer (4)
140. Answer (1)
141. Answer (4)
142. Answer (4)
143. Answer (1)
Less than 1%.
144. Answer (3)



145. Answer (2)
Occurs *en masse* through symplast.
146. Answer (2)
147. Answer (3)
Bile juice does not contain enzymes.
148. Answer (3)
Peyer's patches are found in ileum.
149. Answer (4)
In the absence of lactase, the milk protein is fermented by intestinal bacteria leading to flatulence and other symptoms.
150. Answer (3)
Only water, ions and some drugs are absorbed in large intestine.
151. Answer (3)
Fat digestion is hampered in the absence of concentrated bile juice.
152. Answer (3)
Bicarbonate secretion is stimulated by Secretin.
153. Answer (4)
Maltose is further broken up into glucose.
154. Answer (4)
Parietal cells secrete HCl and Castle's intrinsic factor.
155. Answer (4)
156. Answer (3)
Haemorrhoids are due to enlargement of rectal veins.
157. Answer (4)
Bile salts are steroids synthesized in liver.
158. Answer (1)
159. Answer (2)
Humans have 20 milk teeth and 32 permanent teeth.
160. Answer (3)
Pancreatic juice is a complete juice which has enzymes for digestion of protein, carbohydrates, fats and the nucleic acids.
161. Answer (1)
Sympathetic nervous system will inhibit the secretion of gastric juice.
162. Answer (3)
163. Answer (4)
Sodium bicarbonate neutralizes the acidity of the gastric chyme.
164. Answer (2)
Pyloric sphincter is located between pyloric part of stomach and duodenum.
165. Answer (3)
166. Answer (4)
167. Answer (1)
Volume of thorax in antero-posterior axis is increased by contraction of diaphragm while dorso-ventral axis is affected by external intercostals in mammals.
168. Answer (3)
Vital capacity = ERV + TV + IRV
169. Answer (3)
Gaseous exchange occurs by diffusion across membranes.
170. Answer (1)
No gaseous exchange occurs from the trachea and bronchi. They constitute the conducting part while the alveoli and their ducts form respiratory part.
171. Answer (3)
When the pO_2 is 30 mm Hg, haemoglobin is 50% saturated with O_2 .
172. Answer (1)
173. Answer (3)
174. Answer (2)
175. Answer (4)
176. Answer (3)
177. Answer (2)
Internal intercostal and abdominal muscles are used in forced expiration.
178. Answer (4)
Mammals have negative pressure lungs.
179. Answer (4)
 $250 \times 21\% = 50$ mm Hg.
180. Answer (1)
181. Answer (1)
182. Answer (2)
183. Answer (2)
Respiratory centre is located in the medulla oblongata.



184. Answer (3)
185. Answer (4)
186. Answer (2)
187. Answer (3)
188. Answer (2)
189. Answer (4)
190. Answer (4)
pO₂ has no role on chemosensitive area.
191. Answer (1)
192. Answer (1)
193. Answer (3)
Bivalents are at first observed in zygotene.
194. Answer (3)
195. Answer (4)
Uniports are specific proteins that transport the substance down the concentration gradient (facilitated diffusion).
196. Answer (2)
197. Answer (1)
198. Answer (4)
All papillae do not have taste buds. Filiform papillae are without taste buds.
199. Answer (3)
200. Answer (2)

