

TEST - 7**ANSWERS**

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



Hints to Selected Questions

[PHYSICS]

1. Answer (4)

$$\phi_1 = B_2 \pi a_1^2 \cos 0 = \frac{\mu_0 I}{2a_2} \pi a_1^2$$

2. Answer (1)

R is independent of frequency. Hence (I) is true.
 $X_L = 2\pi fL$, therefore (III) is true

and $X_C = \frac{1}{\omega C} = \frac{1}{2\pi fC}$ therefore (II) is true.

3. Answer (2)

4. Answer (2)

5. Answer (3)

$T = \frac{2\pi m}{qB}$ is independent of speed.

6. Answer (3)

Susceptibility of diamagnetic substance is independent of temperature.

7. Answer (4)

8. Answer (3)

9. Answer (1)

$$M = \frac{qL}{2m} = \frac{q}{2m} \frac{ml^2}{12} 2\pi f = \frac{1}{12} \pi qfl^2$$

10. Answer (2)

$$T = 2\pi \sqrt{\frac{I}{MB_H}}$$

Now $I' = \frac{I}{2}$ and $M' = \frac{M}{2}$

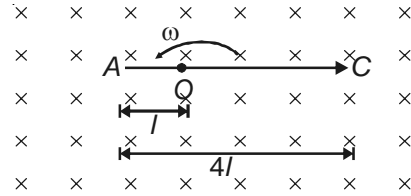
$$\Rightarrow T' = 2\pi \sqrt{\frac{I'}{MB_H}} = 2\pi \sqrt{\frac{I}{MB_H}} = T$$

11. Answer (2)

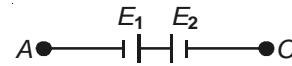
$B = \frac{\mu_0 nI}{2r}$, here $L = 2\pi rn \Rightarrow r = \frac{L}{2\pi n}$

$$\Rightarrow B = \frac{\mu_0 nI}{2L} 2\pi n = \frac{\mu_0 n^2 \pi I}{L}$$

12. Answer (4)



$$E_{OA} = \frac{1}{2} B l^2 \omega; E_{OC} = \frac{9}{2} B l^2 \omega$$



$$V_A + E_1 - E_2 = V_C$$

$$V_A - V_C = E_2 - E_1$$

$$= \frac{9}{2} B l^2 \omega - \frac{1}{2} B l^2 \omega = 4 B l^2 \omega$$

13. Answer (2)

In the $r - t$ graph, it is clear that from a to b there is no change in radius and hence no change in area and magnetic flux. Same is the situation from c to d .

From b to c , $|e| = \frac{d\phi}{dt} = B \frac{d(\pi r^2)}{dt} = 2\pi Br \frac{dr}{dt}$

Since, $\frac{dr}{dt} = \text{constant}$

therefore, $|e| \propto r$

14. Answer (1)

For $r \leq R$, $|e| = \frac{d\phi_B}{dt}$

therefore, $E(2\pi r) = \frac{AdB}{dt} = \pi r^2 \frac{dB}{dt}$

therefore, $E \propto r \Rightarrow$ shows straight line

For $r \geq R$, $E(2\pi r) = \pi R^2 \frac{dB}{dt}$

therefore, $E \propto \frac{1}{r}$ shows rectangular hyperbola.



15. Answer (2)

$$B_{at\ O} = \frac{\mu_0 I}{2R}$$

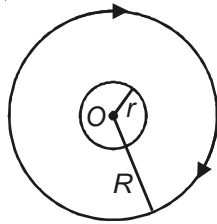
∴ Magnetic flux =

$$B_1 \times \pi r^2 = \frac{\mu_0 I}{2R} \pi r^2$$

$$\therefore \phi_B = MI$$

$$\therefore M = \frac{\mu_0 \pi r^2}{2R}$$

$$\therefore M \propto \frac{r^2}{R}$$



16. Answer (4)

Magnetic flux in \otimes direction through the coil is increasing. Therefore, induced current will produce magnetic field in direction. Thus the current in the loop is anticlockwise.

17. Answer (1)

$$W = \frac{B^2 l^2 v^2 t}{R} = 3.125 \times 10^{-3} \text{ J}$$

18. Answer (3)

$$I = I_1 - I_2 = 1.6 - 0.4 = 1.2 \text{ A}$$

19. Answer (4)

$$P_{av} = I_V^2 R = 40 \text{ W}$$

20. Answer (4)

21. Answer (1)

$$i_3 = i_1 + i_2 = 3 \sin \omega t + 4 \sin(\omega t + 90^\circ)$$

$$i_3 = \sqrt{3^2 + 4^2 + 2(3)(4) \cos 90^\circ} = 5$$

$$\text{and } \tan \phi = \frac{4 \sin 90^\circ}{3 + 4 \cos 90^\circ} = \frac{4}{3} \Rightarrow \phi = 53^\circ$$

$$i_3 = 5 \sin(\omega t + 53^\circ)$$

22. Answer (4)

23. Answer (1)

$$q_0 = CV = 10^{-6} \text{ coulomb}$$

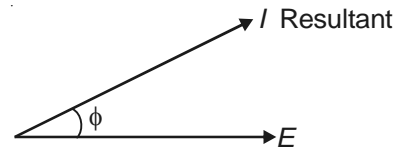
$$\text{Here, } q = q_0 \sin \omega t$$

$$\text{or } I_0 = q_0 \omega$$

$$= 10^{-6} \frac{1}{\sqrt{LC}}$$

$$= \sqrt{1000} \text{ mA}$$

24. Answer (3)



In R, L, C if $X_C > X_L$ and In R, C also I leads E.

25. Answer (1)

$$V_A - IR + E - L \frac{dI}{dt} = V_B$$

$$\text{and here } \frac{dI}{dt} = -10^3$$

By solving $V_B - V_A = 15 \text{ volt}$

26. Answer (1)

27. Answer (1)

28. Answer (2)

29. Answer (1)

30. Answer (2)

$$|e| = \frac{d}{dt} [B \times \text{area}]$$

$$= \text{area} \times \frac{dB}{dt}$$

$$= \frac{R^2 dB}{dt} \text{ [Since area of triangle ABC is } R^2]$$

31. Answer (1)

32. Answer (3)

When triangle comes out $\frac{dA}{dt}$ decreases, i.e. $\frac{d\phi}{dt}$ decreases i.e. e decreases therefore current decreases.

33. Answer (2)

34. Answer (1)

$$P_{av} = \frac{V_0 I_0}{2} \cos \phi$$

35. Answer (4)

36. Answer (2)

At poles, there is no horizontal components of earth's magnetic field i.e. $B_H = 0$.

37. Answer (4)

Magnetic field is same on axial or on equatorial points i.e. on $(P_1 \text{ and } P_2)$ or $(Q_1 \text{ and } Q_2)$

38. Answer (1)

$$S_v = \frac{S_i}{G}$$



39. Answer (4)

$$I = (4 \text{ Bohr magnetons}) (8.52 \times 10^{28}) \\ = 4 \times 9.27 \times 10^{-24} \times 8.52 \times 10^{28} \text{ A/m}$$

40. Answer (3)

41. Answer (4)

$$\tan \delta' = \frac{\tan \delta}{\cos 60^\circ} = \frac{\tan 45^\circ}{1/2} = \frac{1}{1/2} = 2 \Rightarrow \delta' = \tan^{-1} 2$$

42. Answer (4)

In P and R , current divides equally.

43. Answer (4)

44. Answer (1)

$$v = \frac{1}{\sqrt{\mu E}} = \frac{1}{\sqrt{\mu_r \mu_0 \epsilon_r \epsilon_0}} \\ = \frac{1}{\sqrt{\mu_r \epsilon_r} \sqrt{\mu_0 \epsilon_0}} = \frac{C}{\sqrt{\mu_r \epsilon_r}} \\ = \frac{3 \times 10^8}{\sqrt{2.25 \times 4}} = \frac{3 \times 10^8}{\sqrt{9}} = 10^8 \text{ m/s}$$

51. Answer (4)

Fact

52. Answer (4)

53. Answer (4)

 SO_3 is e^- deficient.

54. Answer (3)

Fact

55. Answer (2)

Higher the size, higher the nucleophilicity.

56. Answer (1)

Lesser the hindrance higher the S_N2 .

57. Answer (4)



58. Answer (1)

Fact

59. Answer (4)

Fact

60. Answer (3)

 CH_3COOH and HCOOCH_3 are functional isomers.

61. Answer (1)

45. Answer (2)

$$\text{The average total energy density} = 2 \times \frac{1}{2} \epsilon_0 E_{rms}^2$$

46. Answer (3)

47. Answer (3)

$$K\phi = BNA I$$

$$\phi = \left(\frac{BNA}{K} \right) I \text{ Using iron core, value of magnetic field}$$

increases. So deflection increases for the same current. Hence, sensitivity increases.

48. Answer (4)

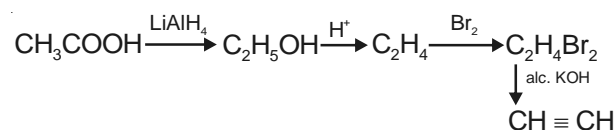
 $|\vec{B}|$ is proportional to number of magnetic field lines per unit area (Area should be normal to field)

49. Answer (1)

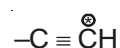
50. Answer (3)

[CHEMISTRY]

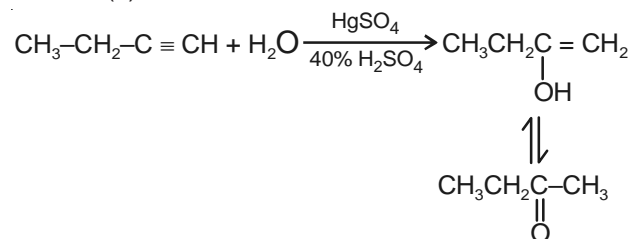
62. Answer (3)



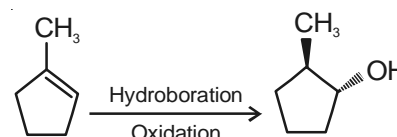
63. Answer (1)

 C^* is sp hybridized. So, $s\%$ character is 50%.

64. Answer (1)

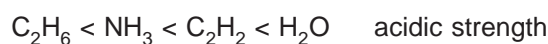


65. Answer (1)



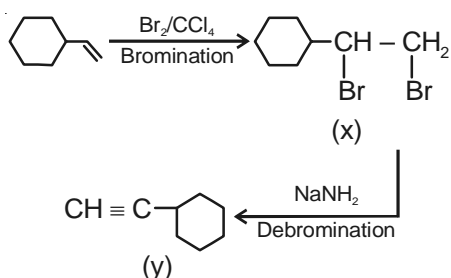
66. Answer (3)

Conjugate of strong acid is weak base and that of a weak acid is a strong base.

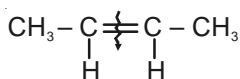


67. Answer (3)

68. Answer (1)



69. Answer (2)



70. Answer (3)

Because of symmetrical structure.

71. Answer (1)

Fact

72. Answer (1)

Quinone

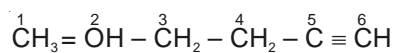
73. Answer (1)

Although chlorine is an o, p-directing group, -I effect of it deactivates the ring and the +M effect is too small to be significant.

74. Answer (3)

$\text{NH}_2\text{-NH}_2\text{-HCl}$, because it is not an organic compound.

75. Answer (4)



76. Answer (4)

Because Na_2S and NaCN are decomposed by dil. HNO_3 .

77. Answer (4)

CCl_4 is covalent compound.

78. Answer (2)

Fact

79. Answer (1)

Organic compound in which N is a part of ring cannot be estimated by Kjeldahl method.

80. Answer (3)

81. Answer (2)

82. Answer (1)

83. Answer (3)

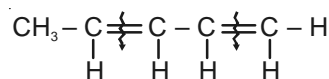
84. Answer (2)

85. Answer (1)

Organic matter contains a number of pathogens so BOD becomes high and hence dissolved oxygen reduced.

86. Answer (2)

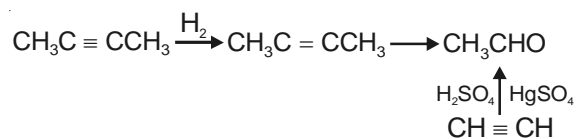
87. Answer (4)



88. Answer (1)

Fact

89. Answer (1)



90. Answer (2)

Li/NH_3 is used for controlled hydrogenation of alkyne which produces trans alkene.

91. Answer (2)

92. Answer (4)

93. Answer (2)

94. Answer (3)

95. Answer (2)

Hofmann rule

96. Answer (1)

97. Answer (2)

98. Answer (3)

99. Answer (2)

100. Answer (4)



[BIOLOGY]

101. Answer (3)

A + G = C + T (for ds-DNA)

102. Answer (4)

103. Answer (1)

Purines are bicyclic N-bases.

104. Answer (4)

DNA polymerase can polymerise the nucleotides in only one direction (5'→3').

105. Answer (4)

Repressor protein in *lac*-operon is an allosteric protein. Which is coded by regulator gene.

106. Answer (4)

VNTRs → 11-60 bp.

107. Answer (2)

3'GGA5'

108. Answer (2)

The small DNA sequences are called VNTRs or minisatellites.

109. Answer (3)

It should be structurally as well as chemically stable.

110. Answer (2)

111. Answer (3)

DNA independent RNA polymerase/Severo Ochoa enzyme.

112. Answer (4)

113. Answer (1)

RNA polymerase III helps in - snRNAs, 5srRNA and tRNA synthesis.

114. Answer (2)

UAA, UGA, UAG (termination codons) and AUG, GUG are initiation codons.

115. Answer (2)

P site on ribosome.

116. Answer (4)

UGG codes for tryptophan.

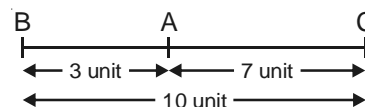
117. Answer (3)

118. Answer (3)

119. Answer (1)

120. Answer (2)

121. Answer (4)



122. Answer (3)

123. Answer (2)

Number of linkage group in an organism is equal to its haploid number of chromosomes e.g. in *Neurospora* the haploid number is $n = 7$, so linkage group is 7.

124. Answer (4)

125. Answer (3)

$$2 \times 0.4 \times 0.6 = 0.48$$

$$\therefore \frac{2000 \times 48}{100} = 960$$

126. Answer (3)

$$AB = 25\%, aB = 25\%, Ab = 25\%, ab = 25\%.$$

127. Answer (2)

128. Answer (4)

If the allele produces a nonfunctional enzyme or no enzyme the phenotype may be affected.

129. Answer (2)

Presence of more than two alleles for a gene is known as multiple allelism.

130. Answer (2)

Term recombination is used to describe the generation of non-parental combinations.

131. Answer (1)

In *Melandrium*, sex determination is XX-XY type.

132. Answer (3)

Option (1) for TSD

133. Answer (4)

134. Answer (3)

Largest human gene is dystrophin.

135. Answer (2)

136. Answer (3)

By Swaminathan

137. Answer (3)

Trichoderma viride is fungus not bacteria so it is incorrect.

138. Answer (3)
Pusa sadabahar variety of chilli is resistance to chilli mosaic virus.
139. Answer (2)
Triticale (hexaploid/octaploid)
140. Answer (2)
141. Answer (3)
Totipotency.
142. Answer (3)
143. Answer (2)
144. Answer (4)
145. Answer (3)
146. Answer (1)
147. Answer (4)
148. Answer (1)
149. Answer (3)
Erythroblastosis foetalis is due to Rh incompatibility.
150. Answer (2)
Theory of spontaneous generation is also known as theory of abiogenesis.
151. Answer (1)
152. Answer (3)
Theory of special creation was proposed by Father Saurez. It states that diversity was always the same since creation and will remain the same in near future.
153. Answer (4)
154. Answer (4)
155. Answer (4)
156. Answer (2)
According to natural selection theory, no variant is completely wiped out.
157. Answer (4)
Not all but most of the variations are inherited.
158. Answer (4)
159. Answer (3)
160. Answer (4)
Australopithecus were present 2 mya.
161. Answer (1)
162. Answer (1)
Malignant cells usually acquire new epitopes not uncommonly at the expense of pre-existing differentiated antigens.
163. Answer (3)
164. Answer (2)
UV-rays are non-ionizing radiation.
165. Answer (2)
c & d is the function of secondary lymphatic organs.
166. Answer (4)
In the host body, RNA genome of the virus replicates to form viral DNA with the help of the enzyme reverse transcriptase.
167. Answer (1)
168. Answer (2)
169. Answer (3)
Entamoeba histolytica : It is the parasite of large intestine.
170. Answer (1)
171. Answer (1)
- | | | |
|-----------------|---|--------------|
| Mantoux | – | Tuberculosis |
| Wassermann | – | Syphilis |
| Tourniquet test | – | Dengue |
172. Answer (2)
Intestinal perforation and death can occur in severe cases of typhoid.
173. Answer (2)
Common cold virus infect the nose and respiratory passage but not the lungs.
174. Answer (2)
Sporozoite attacks the liver cells.
175. Answer (3)
176. Answer (2)
177. Answer (3)
178. Answer (2)
J-chain connects two monomers of antibodies.
179. Answer (2)
180. Answer (1)
181. Answer (2)
Antitoxins are antibodies.
182. Answer (2)
183. Answer (2)
Heroin commonly called smack which is obtained by acetylation of morphine.
184. Answer (1)



185. Answer (4)

The period between 12-18 years of age may be thought of as adolescent period.

186. Answer (3)

Sports person uses diuretics to increase muscle strength.

187. Answer (2)

It is enlargement of prostate gland in male, in female it is enlargement of clitoris and abnormal menstrual cycle.

188. Answer (3)

In GIFT, there is *in-vivo* embryo formation.

189. Answer (4)

190. Answer (1)

191. Answer (3)

Coding strand of DNA does not code for anything.

192. Answer (3)

193. Answer (2)

Straight inheritance.

194. Answer (1)

195. Answer (4)

Petroleum plants belong to families Euphorbiaceae, Asclepiadaceae, Apocyanaceae and Asteraceae.

196. Answer (1)

Infertile means defective or less formation of gametes.

197. Answer (1)

198. Answer (1)

199. Answer (1)

200. Answer (3)

Site of interaction of lymphocytes with the antigen is secondary lymphatic organs.

