

# PACE-IIT & MEDICAL

ANDHERI / BORIVALI / DADAR / CHEMBUR / THANE / NERUL / KHARGHAR / POWAI

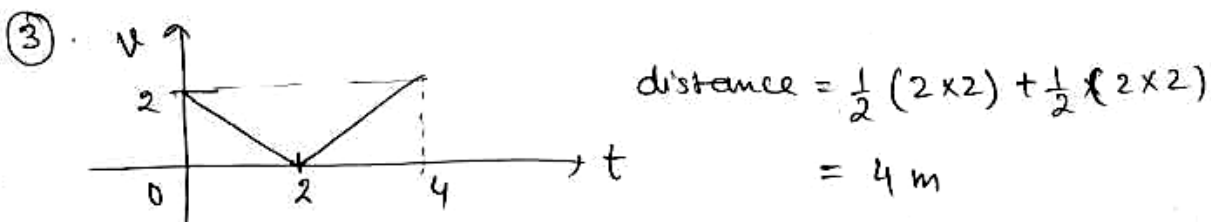
MOCK TEST - 13 - (NEET 2018 Aspirants) - Solutions

①  $\frac{1}{f} = \frac{1}{20.1} + \frac{1}{50.1} \Rightarrow f = 14.3448 = 14.3$

$\frac{\Delta f}{f^2} = \frac{\Delta u}{u^2} + \frac{\Delta v}{v^2} \Rightarrow \Delta f = (14.3)^2 \left( \frac{0.5}{(50.1)^2} + \frac{0.2}{(20.1)^2} \right)$

$\Delta f = 0.1419$  round off to one digit; because our original measurement have only one significant figure after decimal part  
 $= 0.1$

② → ⑥



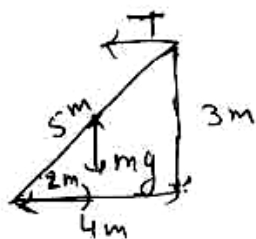
④  $a_A = g \sin 60^\circ$  ;  $a_B = g \sin 30^\circ$

In vertical direction  $a_{Av} = (g \sin 60^\circ) \cos 30^\circ = \frac{3g}{4}$

$a_{Bv} = (g \sin 30^\circ) \cos 60^\circ = \frac{g}{4}$

$(a_{A/B})_{\text{vertical}} = a_{Av} - a_{Bv} = \frac{3g}{4} - \frac{g}{4} = \frac{g}{2} = 4.9 \text{ m/s}^2$

⑤



from torque eq<sup>n</sup>

$T \times 3 = mg \times 2$

$T = \frac{15 \times 10 \times 2}{3} = 100 \text{ N}$

(6) - (4)

(7) For angular momentum to be conserved;  $\tau = 0$

$$\vec{r} \times \vec{F} = 0 \Rightarrow \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 2 & -6 & -12 \\ a & 3 & 6 \end{vmatrix} = \hat{i}(12+12a) + \hat{j}(6+6) + \hat{k}(6+6)$$

$a = -1$

(8) 
$$X_{cm} = \frac{\int_0^L \left(\frac{a}{L} x^2 dx\right) x}{\int_0^L \frac{a}{L} x^2 dx} = \frac{\frac{a}{L} \frac{L^4}{4}}{\frac{a}{L} \frac{L^3}{3}} = \frac{3L}{4}$$

(9) Area velocity =  $\frac{\text{Angular momentum}}{2m}$

$$L = 2m A$$

(10) (3) 
$$\frac{l_1 T_2 - l_2 T_1}{T_2 - T_1}$$

(11) 
$$v (\pi (3R)^2) = v_1 \pi (R)^2$$

$$v_1 = 9v$$

(12) 
$$F = \frac{(7 \times 10^{-2})(2 \times 40 \times 10^{-4})}{10^{-6}} = 560 \text{ N}$$

(13)  $\rightarrow (3)$

(14)  $\rightarrow (3)$

$$(15) \quad P = 10^5 + \frac{50 \times 10}{100 \times 10^{-4}} = 10^5 + 50000 = 1.5 \times 10^5$$

$$W = P \Delta V = 1.5 \times 10^5 \times (100 \times 10^{-4} \times 0.2) = 3000$$

For isobaric process  $W = nR \Delta T$

$$Q = \frac{7}{2} nR \Delta T \quad (\text{Diatomic gas})$$

$$Q = \frac{7}{2} \times 3000 = 10500 \text{ joule}$$

$$(16) \quad \eta = 1 - \frac{T_L}{T_H} \quad (a) \rightarrow 1 - \frac{300}{400} \Rightarrow 25\%$$

$$(b) \rightarrow 1 - \frac{400}{500} \Rightarrow 20\%$$

$$(c) \rightarrow 1 - \frac{500}{600} = 16.67\% \checkmark$$

$$(d) \rightarrow 1 - \frac{600}{800} = 25\%$$

(17) (4)

$$(18) \quad m A \omega^2 = \mu m g \Rightarrow A = \frac{\mu m g}{\omega^2} = \frac{1}{2} (10) = \frac{1}{20} \text{ m} = 5 \text{ cm.}$$

$$(19) \quad A = A_0 e^{-ct}$$

$$\frac{A_0}{3} = A_0 e^{-c(100T)} \quad \text{--- (i)}$$

$$A = A_0 e^{-c(200T)} \quad \text{--- (ii)}$$

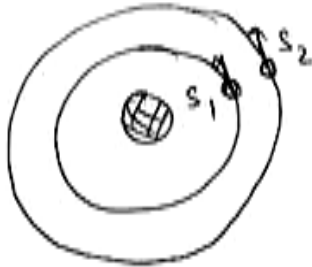
$$\frac{3A}{A_0} = e^{-c(100T)}$$

$$A = \frac{1}{3} (A_0 e^{-c(100T)}) = \frac{1}{3} \left( \frac{A_0}{3} \right) = \frac{A_0}{9}$$

(20)

$$T^2 \propto R^3$$

$$\left(\frac{T_1}{T_2}\right)^2 = \left(\frac{R_1}{R_2}\right)^3 \Rightarrow \left(\frac{1}{8}\right)^2 = \left(\frac{10^4}{R}\right)^3 \Rightarrow R = 4 \times 10^4$$



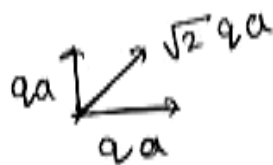
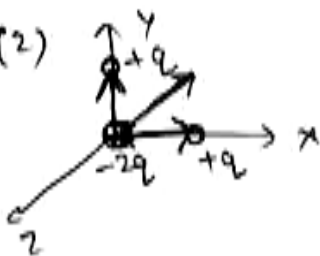
$$\begin{aligned} V_{21} &= V_2 - V_1 \\ &= \omega_2 R_2 - \omega_1 R_1 \\ &= \left(\frac{2\pi}{8}\right)(4 \times 10^4) - \left(\frac{2\pi}{1}\right) \times 10^4 \\ &= \pi \times 10^4 - 2\pi \times 10^4 \\ &= -\pi \times 10^4 \text{ Km/h} \end{aligned}$$

(21) (1) equipotential line will be  $\perp$  to E.

(22) (3)

(23) (4)

(24) (2)



(25) (1) flux is increasing in downward direction, Hence current will flow B to A & D to C.

(26)  $P_{avg} = V_{rms} I_{rms} = 4 \times 220$

(1)

$$Q = 1 \times 4 \times 10^5 \times (100 - 20) = 336000 \text{ joule}$$

$$t = \frac{Q}{P_{avg}} = 6.3 \text{ min}$$

$$\begin{aligned} \textcircled{27} \quad F &= q \vec{v} \times \vec{B} \\ F &= (-2 \times 10^{-6}) \left[ ((2\hat{i} + 3\hat{j}) \times 10^6) \times (2\hat{j}) \right] \\ &= -2 [4\hat{k}] = -8\hat{k} \text{ N} \end{aligned}$$

$$\textcircled{28} \quad i = \frac{qV}{2\pi R} \quad ; \quad A = \pi R^2$$

$$M = iA = \frac{qVR}{2}$$

$$\textcircled{29} \quad (3)$$

$$\textcircled{30} \quad (2)$$

$$\textcircled{31} \quad (1)$$

$$\textcircled{32} \quad (3) \quad P_{avg} = E_{rms} I_{rms} \cos \phi = \frac{E_0 I_0}{2} \cos \phi$$

$$\textcircled{33} \quad (3)$$

$$\textcircled{34} \quad (3)$$

$$\textcircled{35} \quad \mu \sin \theta = 1 \sin 90^\circ$$

$$\mu \left( \frac{3}{8} \right) = 1 \Rightarrow \mu = \frac{8}{3}$$

$$v = \frac{c}{\mu} = \frac{3 \times 10^8}{(8/3)} = 1.125 \times 10^8 \text{ m/s}$$

$$(36) \quad \frac{1}{v} + \frac{1}{30} = \frac{2(1.5-1)}{20} \Rightarrow v = 60 \text{ c.m.}$$

$$m = -\frac{60}{30} = -2$$

$$h_i = -2 \cdot h_o = -40 \text{ c.m. (inverted & Real)}$$

$$(37) \quad \theta = 1.22 \frac{\lambda}{D} = 1.22 \times \frac{8 \times 10^{-7}}{2 \times 10 \times 10^{-2}} = 6.1 \times 10^{-6} \text{ rad}$$

$$(38) \quad \frac{1}{f} = \frac{1}{40} - \frac{1}{100} \Rightarrow \frac{1}{f} = \frac{3}{200} \text{ c.m.}$$

$$f = \frac{200}{3} \text{ c.m. } \approx \frac{2}{3} \text{ m}$$

$$P = \frac{1}{f} = \frac{3}{2} = 1.5 \text{ D}$$

$$(39) \quad \Delta x = 0; \quad \Delta x = 4\lambda_0$$

$$(40) \quad 2t = n\lambda \Rightarrow t_{\min} = \frac{\lambda}{2} = \frac{5890 \times 10^{-10} \text{ m}}{2} = 2.945 \times 10^{-7} \text{ m}$$

$$(41) \quad n = \frac{9 \times 10^{-3}}{(hc) / (667 \times 10^{-9})} = \frac{9 \times 10^{-3} \times 667 \times 10^{-9}}{6.67 \times 10^{-34} \times 3 \times 10^8} = 3 \times 10^{16}$$

$$(42) \quad \frac{1}{15} = \frac{\left(\frac{1}{2}\right)^{t/50}}{1 - \left(\frac{1}{2}\right)^{t/50}}$$

$$16 \left(\frac{1}{2}\right)^{t/50} = 1$$

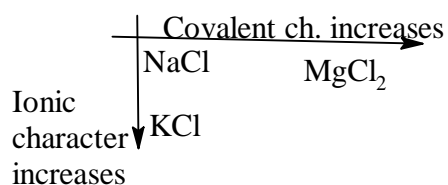
$$\Rightarrow \left(\frac{1}{2}\right)^{t/50} = \frac{1}{16} \Rightarrow t/50 = 4 \Rightarrow t = 200 \text{ years}$$

$$(43) \quad hf = 2.5 \text{ eV} \Rightarrow f = \frac{2.5}{4.13 \times 10^{-15}} = 6.05 \times 10^{14}$$

$$(44) - (4)$$

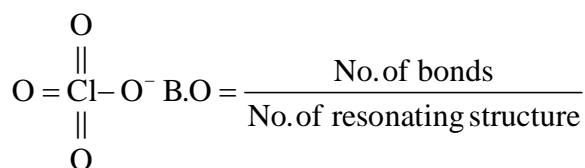
$$(45) - (4)$$

- 46. (1)
- 47. (3)
- 48. (2)
- 49. (2)
- 50. (4)
- 51. (1)
- 52. (1)
- 53. (3)
- 54. (2)
- 55. (3)
- 56. (1)
- 57. (3)
- 58. (3)
- 59. (4)
- 60. (1)
- 61. (1)
- 62. (2)
- 63. (1)
- 64. (1)
- 65. (3)
- 66. (2)
- 67. (2)
- 68. (1)
- 69. (1)
- 70. (4)
- 71. (1)
- 72. (3)



- 73. (2) Hybrid state of B is sp<sup>2</sup>
- 74. (3)
- 75. (4) CN<sup>-</sup> is ionic in nature.
- 76. (2)

- 77. (1)



78. (3)  
 79. (3)  
 80. (2)  
 81. (2)  
 82. (2)  
 83. (4)  
 84. (3)  
 85. (4)  
 86. (2)  
 87. (3)  
 88. (4)  
 89. (4)  
 90. (2)  
 91. (3) Homonym is the same name given to two different species  
 92. (1) page no.20, 2.2.1 Chrysophytes  
 93. (3) page no. 26, last paragraph  
 94. (3) NCERT XI page 35  
 95. (3) NCERT XI page 42  
 96. (4) Ribosomes  
 97. (3) higher plants  
 98. (4) microtubules  
 99. (1) It is the significance of meiosis.  
 100. (4) Plant cell lacks both centrioles as well as asters  
 101. (4) NCERT pg no 66  
 102. (4) Inflorescence in cauliflower is compound corymb  
 103. (4) In *Nepenthes*, colourful lid of pitcher is formed by modified leaf apex to attract insects  
 104. (3) Factional Question  
 105. (1) page no. 84 , 6.1.1 Meristematic tissues  
 106. (1) permeable and differentially permeable respectively  
 107. (3) DPD  
 108. (3) Pg. no. 202  
 109. (4) Pg. no. 202  
 110. (2) NCERT pg no 208  
 111. (2) NCERT pg no 216, 222, HSC 67, 69  
 112. (1) HSC pg no 70  
 113. (1) page no 231,232  
 114. (2) page no 230 , 14.3 Fermentation  
 115. (4) ETS is inhibited by cyamides antimycin A and Co.  
 116. (1) NCERT XI page 246  
 117. (3) NCERT XI page 252  
 118. (2) NCERT XI page 248  
 119. (2) NCERT XII page 6  
 120. (2) Xenogamy  
 121. (3) Chemotropism  
 122. (4) Nutritive  
 123. (2) page no 70 , fig, 5.1  
 124. (4) page no 88 , 89  
 125. (3) page no 89 , Haemophilia  
 126. (2) An auxotroph is that mutant which is not able to prepare its own metabolites from the raw materials obtained from external source.  
 127. (1) NCERT XII, Pg. no.107



128. (3) NCERT XII, Pg. no. 97,120  
 Prokaryotes have three major types of DNA synthesizing enzymes call DNA polymerase III, II and I. All of them possess 3' to 5' exonuclease activity, but DNA pol I also has 5' to 3' exonuclease activity.  
 Rifampicin inhibits RNA synthesis by inhibiting RNA polymerase.
129. (3) NCERT XII page 175
130. (2) NCERT XII page 175
131. (3) Insulin is being synthesized using genetically engineered *E. coli*
132. (3) NCERT pg no 184
133. (1) Natality equal to mortality
134. (2) Immigration, natality, mortality, emigration
135. (3) NCERT-XII Pg.no.252
136. (4) NCERT-XII Pg.no.253
137. (4) NCERT XII page 263
138. (3) NCERT XII page 261 & 262
139. (3) Stone leprosy is damage caused to rocks and marble caused by acid rain.
140. (3) HSC pg no 253
141. (3)
142. (2)
143. (4)
144. (3)
145. (3) Menstrual, proliferative and ovulatory phase.
146. (1)
147. (4)
148. (2) Patient suffering from amoebiasis.
149. (2)
150. (1) Jelly fish have radial symmetry.Crab,Round worms are true coelomates.
151. (2)
152. (4) In Chameleon pharyngeal gill slits are present.Non chordates like scorpion have dorsal heart.Post anal tail is present in Chordates.
153. (4) Pg 55 Last para
154. (3) Astrocytes arrange themselves forming blood brain barrier.
155. (3) Acetyl choline neurotransmitter is produced by vagus nerve which decreases the heart beat.
156. (4) Pg 323 3<sup>rd</sup> para
157. (4) parathormone increases calcium level in blood and thus deficiency causes less calcium level affecting clotting.
158. (3) Excessive secretion of adrenal cortex hormones causes Cushing disease.
159. (1) cortisol causes gluconeogenesis which is opposite to action of insulin.
160. (1) Sting apparatus,modified ovipositor is present posteriorly in honey bee.
161. (1)
162. (2)
163. (4)
164. (3)
165. (4) Thomas R Malthus – An essay on population
166. (4)
167. (4)
168. (4)
169. (1)
170. (1)
171. (3)

172. (4)  
173. (1)  
174. (2)  
175. (2)  
176. (3)  
177. (3)  
178. (1) Mitral valves close during ventricular systole while aortic valves close during diastole.  
179. (3)  
180. (3)