ENTHUSIAST ADVANCE COURSE

PHASE : MEA, B, C, D, L, M, N, O, P & Q

TARGET : PRE MEDICAL 2025

Test Type : **MAJOR** Test Pattern : **NEET (UG)**

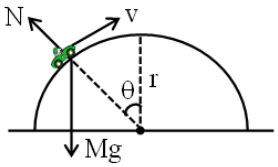
TEST DATE : 28-11-2024

ANSWER KEY

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

HINT – SHEET

1. Ans (1)



$$Mg\cos\theta - N = \frac{Mv^2}{r}$$

$$N = Mg\cos\theta - \frac{Mv^2}{r} \quad \ldots (1)$$

here v is constant θ is decreasing, so $\cos\theta$ will increase and N will increase.

2. Ans (3)

$a_c = \frac{v^2}{r}$, radius is constant in case (a) and increases in case (b). So that magnitude of acceleration is constant in case (a) and decreases in case (b).

3. Ans (4)

$$V_1 = \frac{5\times 1 - 2\times 2}{(1+2)} = \frac{1}{3}$$

$$V_2 = \frac{2\times 2 + 1\times 5}{(1+2)} = \frac{9}{3}$$

so, $V_1 : V_2 = 1 : 9$

4. Ans (1)

$$U = \frac{1}{2}\left(\frac{3\times 6}{3+6}\right)(-10-10)^2 = (-20)^2 = 400\ J$$

5. Ans (4)

If mass is non uniformly distributed then COM of ring may lie from origin to circumference.

6. Ans (2)

$$(P)\ x_{cm} = \frac{m_A\times 0 + m_B\times 3 + m_C\times 6}{m_A + m_B + m_C}$$

$$x_{cm} = \frac{9}{3} = 3m$$

$$(Q)\ x_{cm} = \frac{m_B\times 3 + m_C\times 6}{m_A + m_B + m_C}$$

$$= \frac{15m_B}{5m_B} = 3m$$

$$(R)\ x_{cm} = \frac{3m_B + 6m_C}{m_A + m_B + m_C} = \frac{12m_C}{5m_C} = \frac{12}{5}m$$

$$(S)\ x_{cm} = \frac{3m_B + 6m_C}{m_A + m_B + m_C} = \frac{18m_A}{5m_A} = \frac{18}{5}m$$

7. Ans (3)

$\bar{p}_i = \bar{p}_f$ (Linear momentum is conserved)

$O = m(3\hat{i} + 2\hat{j}) + m(-\hat{i} - 4\hat{j}) + mv'$

$O = 2\hat{i} - 2\hat{j} + v'$

$\therefore v' = -2\hat{i} + 2\hat{j}$ m/s

8. Ans (1)

Velocity of centre of mass will be zero because net force on system is zero.

9. Ans (3)

$$v_e = \sqrt{2gR} \Rightarrow \frac{v_A}{v_B} = \sqrt{\frac{g_A}{g_B} \times \frac{R_A}{R_B}} = \sqrt{x \times r}$$

$$\therefore \frac{v_A}{v_B} = \sqrt{rx}$$

10. Ans (3)

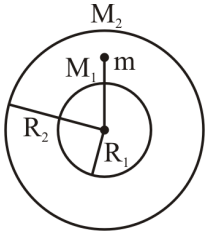
$$V_0 = \sqrt{\frac{GM}{r}} \Rightarrow V_0 \propto \frac{1}{\sqrt{r}}$$

$$\frac{V_1}{V_2} = \sqrt{\frac{r_2}{r_1}} \Rightarrow \frac{V}{V_2} = \sqrt{\frac{4R}{R}}, V_2 = \frac{V}{2}$$

11. Ans (1)

Gravitational force does not depends upon medium

12. Ans (2)



$$F = \frac{GM_1m}{\left(\frac{R_1+R_2}{2}\right)^2}$$

$$= \frac{4GM_1m}{(R_1+R_2)^2}$$

13. Ans (4)

By Energy conservation

$$\frac{-GMm}{R} + \frac{1}{2}m\left(2\sqrt{gR}\right)^2 = 0 + \frac{1}{2}mv^2$$

$$v = \sqrt{2gR}$$

14. Ans (4)

$$\Delta E = E_f - E_i = -\frac{GMm}{2\left(\frac{3r}{2}\right)} - \left(-\frac{GMm}{2r}\right)$$

$$= \frac{GMm}{6r}$$

15. Ans (4)

$$F_{12} = \frac{GMm}{r^2}$$

$$F_{21} = \frac{GMm}{r^2}$$

$F_{12} = F_{21}$

16. Ans (3)

$$I = -\frac{dV}{dx} = \frac{d}{dx}\left(\frac{K}{x}\right) = K\frac{d}{dx}(x^{-1})$$

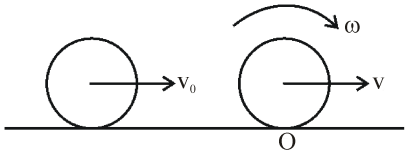
$$= -\frac{K}{x^2}$$

at $x = 2$, $I = -\frac{K}{4}$

18. Ans (2)

Normal shfit towards point of rotation.

19. Ans (3)



By conserving angular momentum about 'O'

$$mv_0R = \left(\frac{2}{5}mR^2 + mR^2\right)\frac{v}{R}$$

$$mv_0R = \frac{7}{5}mR^2\frac{v}{R}$$

$$\Rightarrow v = \frac{5v_0}{7}$$

20. Ans (4)

$$KE_R = \frac{40}{100} \times KE_T$$

$$\frac{1}{2}MK^2\omega^2 = \frac{2}{5} \times \frac{1}{2}M\omega^2R^2$$

$$\frac{K^2}{R^2} = \frac{2}{5}$$

21. Ans (3)

$$a = \frac{g\sin\theta}{1 + k^2/R^2} = \frac{g\sin\theta}{1 + \frac{2}{5}} = \frac{5}{7}g\sin\theta$$

in sliding

$$a = g\sin\theta \Rightarrow a = \frac{7a}{5}$$

22. Ans (1)

Angular momentum conservation

$$mV_0R - \frac{mR^2\omega_0}{2} = 0$$

23. Ans (3)

Moment of inertia depends on mass distribution.

24. Ans (4)

$$\text{Work} = \frac{1}{2}I\omega^2 = \frac{1}{2}(1)\frac{(40\times10^{-2})^2}{2}(10\times2\pi)^2$$

$$= \frac{1}{4}(16)\,(10^{-2})100\,(4\pi^2) = 16\pi^2 = 158$$

26. Ans (3)

As both wires have same volume,

$$V_1 = V_2 \Rightarrow A_1L_1 = A_2L_2$$

$$AL_1 = 6AL_2 \text{ or } \frac{L_1}{L_2} = 6$$

As both wires are made of same material,

$$Y_1 = Y_2 \Rightarrow \frac{F_1L_1}{A_1\Delta\ell_1} = \frac{F_2L_2}{A_2\Delta\ell_2}$$

$$\Rightarrow \quad F_2 = F_1 \times \frac{L_1}{L_2} \times \frac{A_2}{A_1} \times \frac{\Delta\ell_2}{\Delta\ell_1}$$

$$= F \times 6 \times \frac{6A}{A} \times \frac{2\Delta\ell}{\Delta\ell} \quad = 72F$$

27. Ans (3)

$$\ell\,\phi = r\theta \Rightarrow \phi = \frac{r\theta}{\ell}$$

$$\phi = \frac{4\times30^\circ}{1000} = 0.12^\circ$$

28. Ans (2)

$$\nu \propto \frac{1}{\text{Area}} \propto \frac{1}{r^2}$$

$\nu \longrightarrow$ doubled $\Rightarrow$ Area $\longrightarrow$ halved

So radius will be $\frac{1}{\sqrt{2}}$ times.

$$r_2 = \frac{1}{\sqrt{2}}\,r_1 = 0.7\,r_1$$

= 70% of first

29. Ans (1)

$d_A = 2$ cm and $d_B = 4$ cm

$\therefore\ r_A = 1$ cm and $r_B = 2$ cm

From equation of continuity, av = constant

$$\therefore\ \frac{u_A}{u_B} = \frac{a_B}{a_A} = \frac{\pi(r_B)^2}{\pi(r_A)^2} = \left(\frac{2}{1}\right)^2 \Rightarrow u_A = 4u_B$$

30. Ans (3)

From bernoulie's theorem higher the speed smaller will be the pressure.

31. Ans (2)

$$\eta = \frac{\text{shear stress}}{\text{shear strain rate}} = \frac{\text{shear stress}}{dv/dz}$$

$$\eta = \frac{0.03}{0.15} = 0.2\,\text{Pa} - \text{S}$$

$\eta = 0.2 \times 10$ Poise

= 2 Poise

32. Ans (1)

$$Y = \frac{F}{A\frac{\Delta\ell}{\ell}} = \frac{1000}{10^{-6}\times10^{-3}}$$

$= 10^{12}\ \text{N/m}^2$

33. Ans (3)

Gravitation force mg remains constant

Viscous force increases with time due to increase in speed.

Net force = $F_g - F_v$; gradually decreases with time and becomes zero at terminal velocity.

34. Ans (1)

$$h = \frac{2T\cos\theta}{r\rho g} \ ;\ \theta = 0^\circ$$

$$\Rightarrow\ r = \frac{2T}{h\rho g} = \frac{(2)\left(7\times10^{-2}\right)}{\left(8\times10^{-2}\right)\left(10^3\right)(10)}$$

$= 1.75 \times 10^{-4}$ m

$= 0.175$ mm $\Rightarrow$ diameter = 0.35 mm

35. Ans (3)

After changing load on wire, it is advised to wait for few minutes before taking reading as it gives sufficient time for wire to acquire its desired change in length and any vertical oscillations can get subsided, providing more accurate measurement.

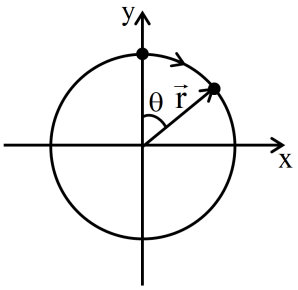
Reason is wrong as kinks on go as we increase the load gradually and wire becomes straight as the load on it gradually increases.

36. Ans (2)

$$\omega_{BA} = \frac{(V_{BA})_\perp}{r} = \frac{50\sin30^\circ + 10\sqrt{3}\sin60^\circ}{20}$$

$$= \frac{175}{20} = 8.75\ \text{rad/sec.}$$

37. Ans (2)



$\theta = \omega t$

$\theta = 2 \times \frac{\pi}{8}$

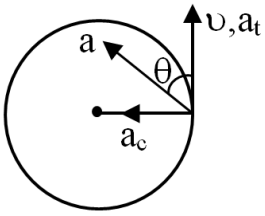
$\theta = \frac{\pi}{4}$ rad

$\theta = 45°$

$\vec{r} = 10\sin 45^{o}\hat{i} + 10\cos 45^{o}\hat{j}$

$\vec{r} = 5\sqrt{2}\,\hat{i} + 5\sqrt{2}\,\hat{j}$

38. Ans (3)



$\upsilon = a_t t = 2(2) = 4\text{m/s}$

$a_c = \frac{\upsilon^2}{r} = 8$

$\tan\theta = \frac{a_c}{a_t} = \frac{8}{2} = 4$

$\theta = \tan^{-1}(4)$

39. Ans (4)

$v^2 \propto rg$

$\frac{v_1^2}{Rg} = \frac{v_2^2}{4Rg} \Rightarrow v_2 = 2v_1$

$\%\text{ change} = \frac{v_2 - v_1}{v_1} \times 100 = \frac{2v_1 - v_1}{v_1} \times 100$

$= 100\%$

40. Ans (2)

$mu = Mv$

$\Rightarrow \frac{m}{M} = \frac{v}{u}$

but $e = \frac{v}{u} \leqslant 1 \Rightarrow e = \frac{m}{M} \leqslant 1$

41. Ans (2)

According to Kepler's third law

$T^2 \propto R^3$

$\therefore \frac{T_1}{T_2} = \left(\frac{R_1}{R_2}\right)^{3/2}$ or

$R_2 = (R_1)\left(\frac{T_2}{T_1}\right)^{2/3} = (R_1)\left(\frac{16}{2}\right)^{2/3}$

$= 4R_1 = 4R$ (Given $R_1 = R$) ....(i)

Orbital velocity, $v_o = \sqrt{\frac{GM}{R}}$

$\therefore \frac{v_{o2}}{v_{o1}} = \sqrt{\frac{R_1}{R_2}} = \sqrt{\frac{R_1}{4R_1}} = \frac{1}{2}$ (using (i))

or $v_{o2} = \frac{1}{2}v_{o1} = \frac{1}{2}v_o$

42. Ans (4)

As we climb up perpendicular distance of gravity increases , as a result torque inreases.

43. Ans (3)

$\rho' = \frac{\rho}{\left(1 - \frac{P}{B}\right)} = \frac{\rho B}{B - P}$

44. Ans (4)

$h \propto \frac{1}{g_{eff.}}$

45. Ans (4)

$h = \frac{2T\cos\theta}{r\rho g} = \frac{(2)(50)(\cos 0^{o})}{(0.05)(0.8)(980)}$

$= 2.6\text{cm}$

$h' = \frac{h}{\cos 30^{o}} = \frac{2.6}{\sqrt{3}} \times 2 = 3.0\text{cm}$

50. Ans (4)

Number of spherical nodes = $n - \ell - 1$

$1s \longrightarrow 1 - 0 - 1 = 0$

$2p \longrightarrow 2 - 1 - 1 = 0$

$4f \longrightarrow 4 - 3 - 1 = 0$

53. Ans (3)

7^{th} pd. IVB gp.

at. no 104 = Unq

54. Ans (2)

$_{90}Th = [Rn]\ 5f^{0}6d^{2}7s^{2}$

56. Ans (2)
a = Covalent radius, b = Vander Waal's radius

62. Ans (1)
$CO_2 \longrightarrow$ acidic best absorbed in basic that is metal oxide (K_2O)

64. Ans (2)
NCERT, Pg. # 88

69. Ans (1)
Repulsion : $\ell p - \ell p > \ell p - \ell p > bp - bp$; Q 33 given

73. Ans (2)
NH_3 has weakest H-bond, HF has strongest H-bond but extent of H-bonding is greater in H_2O than HF.

74. Ans (2)
$\pi^* 2p_x^1 = \pi^* 2p_y^1$

75. Ans (2)
Stability $\propto$ Bond order

77. Ans (1)
1s $\longrightarrow$ zero node
2s $\longrightarrow$ one node
p $\longrightarrow$ dumbell shape
3s $\longrightarrow$ 2 Nodes

78. Ans (3)
NCERT-XI, Pg # 48,57,52,44, Part-1

81. Ans (2)
NCERT-XI Pg. # 86 (Part-I)

84. Ans (3)
Due to obsance of 2d-orbital

85. Ans (3)
NCERT XI^{th} Pg.#108 Para-1 (Part-I)

86. Ans (3)
Concept

87. Ans (1)
N_2^- is less stable because it has more electron in ABMO

88. Ans (3)
μ of $O_2 > N_2$

89. Ans (1)
Concept

90. Ans (1)

O = O	N ≡ N
$2p_\pi - 2p_\pi$	$2p_\pi - 2p_\pi$
S = S	P ≡ P
$3p_\pi - 3p_\pi$	$3p_\pi - 3p_\pi$

Strength of overlapping $\longrightarrow 2p_\pi - 2p_\pi > 3p_\pi - 3p_\pi$

91. Ans (1)
NCERT-XI, Pg. # 97

92. Ans (3)
NCERT, Pg. # 98

93. Ans (3)
NCERT Pg. No. # 96

94. Ans (2)
NCERT Pg # 100-101

95. Ans (2)
NCERT Pg. # 101

96. Ans (4)
NCERT, Pg. # 96

97. Ans (2)
NCERT-XI, Pg # 96

98. Ans (1)
NCERT, Pg # 93

99. Ans (4)
NCERT-XI, Pg. # 124

100. Ans (1)
NCERT-XI, Pg. # 125

101. Ans (3)
NCERT-XI, Pg. # 127

102. Ans (3)
NCERT, Pg. # 127

103. Ans (3)
NCERT-XI, Pg. # 123

104. Ans (3)
NCERT, Pg. # 126

105. Ans (3)
NCERT, Pg. # 127, 128

106. Ans (3)
NCERT-XI, Pg # 126, 127

107. Ans (3)
NCERT-XI, Pg # 126, 127

108. Ans (2)
NCERT-XI, Pg # 127, 128

109. Ans (1)
NCERT, Pg. # 120, 121, 122

110. Ans (4)
NCERT-XI, Pg. # 124

111. Ans (3)
NCERT-XI, Pg. # 104, 108

112. Ans (2)
NCERT-XI, Pg. # 106

113. Ans (4)
NCERT, Pg. # 108

114. Ans (4)
NCERT-XI, Pg. # 110, 148, 152, 153

115. Ans (2)
NCERT-XI, Pg. # 112

116. Ans (1)
NCERT, Pg. # 115

117. Ans (1)
NCERT-XI, Pg. 118

118. Ans (4)
NCERT-XI, Pg # 115

119. Ans (4)
NCERT-XI, Pg. # 117

120. Ans (1)
NCERT-XI, Pg. # 121

121. Ans (3)
NCERT, Pg. # 69

122. Ans (4)
NCERT Pg. # 100, 101

123. Ans (3)
NCERT-XI, Pg. # 121

124. Ans (4)
NCERT-XI, Pg. # 127

125. Ans (3)
NCERT-XI, Pg. # 118

126. Ans (4)
NCERT, Pg. # 111

127. Ans (3)
NCERT Pg. # 110

128. Ans (3)
NCERT Pg. # 106

129. Ans (1)
NCERT Pg # 124

130. Ans (3)
NCERT-XI, Pg.# 122, 123, 126
pachytene, crossing over, diplotene

131. Ans (1)
NCERT, Pg. # 127

132. Ans (2)
NCERT-XI, Pg. # 127

133. Ans (4)
NCERT-XI, Pg. # 122

134. Ans (2)
NCERT-XI, Pg. # 96

135. Ans (2)
NCERT-XI, Pg. # 96, 97, 98, 100

142. Ans (1)
NCERT Pg. # 210

143. Ans (3)
NCERT Pg. # 184

144. Ans (3)
NCERT Pg. # 187-188

146. Ans (1)
NCERT Pg # 199,200,201,212

147. Ans (3)
NCERT Pg. #212, 213, 214, 209

154. **Ans (1)**
NCERT Pg # 201

155. **Ans (3)**
NCERT Pg # 195

156. **Ans (4)**
NCERT Pg. # 195

157. **Ans (2)**
NCERT Pg. # 199

158. **Ans (1)**
NCERT Pg. 202

159. **Ans (3)**
NCERT Pg. # 201

161. **Ans (3)**
NCERT, Pg. # 194,195

164. **Ans (2)**
NCERT Pg. # 195

165. **Ans (3)**
NCERT Pg. # 198

166. **Ans (3)**
NCERT-XII, Pg. # 185-186

167. **Ans (1)**
NCERT Pg # 190

171. **Ans (2)**
NCERT, Pg. # 211

172. **Ans (3)**
NCERT Pg. # 209, 211, 212

180. **Ans (2)**
NCERT Pg. # 284