

## MAJOR TEST # 03

ALLEN NEET-UG

DATE : 04 - 04 - 2013

## SYLLABUS - 03

## ANSWER KEY

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

## HINT - SHEET

3. Escape velocity

$$= \sqrt{\frac{2GM}{R}} = \sqrt{\frac{2G\left(\frac{4}{3}\pi R^3\right)\rho}{R}} \propto R$$

Therefore  $v_1 : v_2 : v_3 = R_1 : R_2 : R_3$ 

$$= R_1 : \frac{R_1}{2} : \frac{R_1}{3} = 6 : 3 : 2.$$

8. NCERT Pg. # 187

$$\tan\theta = \frac{B_v}{B_H}$$

$$B = \sqrt{B_v^2 + B_H^2}$$

$$11. \quad mg' = mg - m\omega^2 R \cos^2\lambda \Rightarrow \frac{3}{5} mg = mg - m\omega^2 R$$

$$\omega = \sqrt{\frac{2g}{5R}}$$

12. NCERT Pg. # 134

Due to Lorentz force

14. NCERT Pg. # 154

$$F_m = \frac{\mu_0 I_1 I_2 \ell}{2\pi d}$$

16. NCERT Pg. # 138

21.  $E = 2.2$  and  $V = E - Ir$ 

$$\Rightarrow 2 = 2.2 - \frac{E}{R+r} \cdot r$$

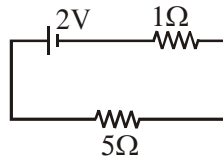
$$\Rightarrow 0.2 = \frac{2.2}{4+r} \cdot r$$

$$\Rightarrow r = 0.4\Omega$$

22. NCERT Pg. # 135

23. Given circuit can be redraw as

$$I = \frac{2}{6} = \frac{1}{3} \text{ A}$$



24. NCERT Pg. # 135

$$\frac{55}{45} = \frac{3}{Q}$$

$$Q = \frac{27}{11} \Omega$$

$$\frac{75}{25} = \frac{x+3}{Q}$$

$$x = \frac{48}{11} \Omega$$

26. NCERT Pg. # 138

$$r = \frac{mv}{qB} \quad r = \frac{p}{qB} \Rightarrow r \propto p$$

28.  $\therefore$  magnetic moment =  $\frac{q}{2m}$  (angular momentum)

$\therefore$  magnetic moment

$$= \frac{q}{2m} [I\omega] = \frac{q}{2m} \left[ \frac{2}{5} mR^2 \omega \right] = \frac{1}{5} qR^2 \omega$$

30. Magnetic force acts radially outward on the loop.

34. In uniform magnetic field force experienced by any closed loop is always zero.

35. As  $\vec{a} \perp \vec{B}$

$$\text{So } 2x + 3 - 4 = 0 \Rightarrow x = 0.5$$

36. When key is open then  $R_{eq} = \frac{3R}{2}$

$$\text{When key is closed then } R_{eq} = \frac{2R}{3} + \frac{2R}{3} = \frac{4R}{3}$$

41. In series  $I_s = \frac{E}{nR+R}$

$$\therefore \text{ In parallel } I_p = \frac{E}{\frac{R}{n} + R}$$

$$\therefore I_p = 10I_s$$

$$\frac{E}{\frac{R}{n} + R} = \frac{E}{nR + R}$$

Solve it  $n = 10$ .

43.  $U_{\text{system}} =$  sum of energy of all paris.

$$= \frac{Kq_1q_2}{1} + \frac{Kq_2q_3}{1} + \frac{Kq_3q_4}{1} + \frac{Kq_1q_4}{1} + \frac{Kq_2q_4}{\sqrt{2}} + \frac{Kq_1q_3}{\sqrt{2}}$$

45.  $V_A - V_B = -\vec{E} \cdot \Delta \vec{r}$

$$= -(2\hat{i} + 3\hat{j} + 4\hat{k}) \cdot (-\hat{i} - 3\hat{j} + 3\hat{k})$$

$$= -[-2 - 9 + 12]$$

$$= -1 \text{ V}$$

91. NCERT, Eng., Part - II, Page No. # 10

93. NCERT, Eng., Part - II, Page No. # 23

95. NCERT, Eng., Part - II, Page No. # 11, 13, 15

97. NCERT, Eng., Part - II, Page No. # 23

99. NCERT, Eng., Part - II, Page No. # 25

101. NCERT, Eng., Part - II, Page No. # 27

105. NCERT, Eng., Part - II, Page No. # 24, 25

107. NCERT, Eng., Part - II, Page No. # 30

109. NCERT, Eng., Part - II, Page No. # 10

111. NCERT, Eng., Part - II, Page No. # 34

113. NCERT, Eng., Part - II, Page No. # 34

119. NCERT Page No. 137

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131. NCERT Page No. 131

133. NCERT Page No. 133(E), 143(H)

135. NCERT Page No. 131(E), 142(H)

137. NCERT Page No. 133(E), 143(H)

139. NCERT Page No. 129, 130, 131(E), 141(H)

141. NCERT Page No. 140, 141(E), 151(H)

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145. NCERT Page No. 140, 141(E), 151, 152(H)

147. NCERT Page No. 129, 130(E), 141(H)

149. NCERT Page No. 134(E), 145(H)

151. NCERT Page No. 137(E), 148(H)

153. NCERT Page No. 87(E), 95(H)

156. NCERT-XII Pg # 60 (E), 67 (H)

158. NCERT-XII Pg # 61 (E), 68 (H)

160. NCERT-XII Pg # 59 (E), 66 (H)

172. NCERT-XII Pg # 51, 52, (E), 55, 56 (H)

178. NCERT-XII Pg # 54 (E), 59 (H)

179. NCERT-XII Pg # 53 (E), 58 (H)