Enthusiast, Leader & Achiever Course

PHASE : (All Phase)

TARGET : PRE-MEDICAL 2020

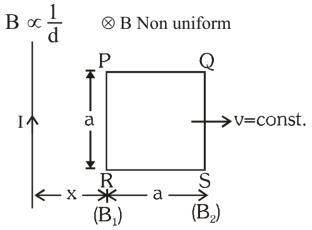
Test Type : **MAJOR** Test Pattern : **NEET (UG)**

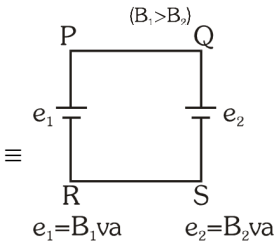
TEST DATE : 05-06-2020

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.	4	1	1	3	2	4	2	1	4	4	3	1	1	1	4	4	4	4	1	3	1	2	3	4	3	2	1	4	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.	1	2	3	3	1	1	1	2	3	1	1	1	1	4	3	1	2	3	3	3	4	4	2	1	1	4	1	4	3	2
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	1	3	4	1	4	4	2	4	2	1	2	3	1	3	4	3	4	3	3	3	1	4	2	4	3	3	4	4
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.	3	4	3	2	4	2	1	1	2	3	1	3	2	2	3	2	3	2	4	3	3	4	1	3	3	1	3	3	3	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.	4	3	3	1	2	4	2	4	4	3	2	1	2	2	4	1	1	1	4	3	2	4	3	1	1	1	4	2	2	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	4	1	4	2	1	2	3	2	2	1	2	3	2	2	4	3	1	3	2	1	1	2	2	4	2	4	2	4	4

HINT – SHEET

1. Ans (4)





$(e_1 > e_2)$

instantaneous induced emf in square metal loop is

$e_{net} = e_1 - e_2 = av(B_1 - B_2)$,

where $B_1 = \frac{\mu_0 I}{2\pi x}$ & $B_2 = \frac{\mu_0 I}{2\pi(x+a)}$

using the values of B_1 and B_2

$e_{net} = \frac{\mu_0 Iva}{2\pi}\left[\frac{1}{x} - \frac{1}{x+a}\right]$

$e_{net} = \frac{\mu_0 Iva^2}{2\pi x(x+a)}$ (always non zero)

2. Ans (1)

$\because \eta = 80\%$

$P_{secondary} = \frac{80}{100} \times 4000 = 3200$ Watt

$P_P = V_P I_P$

$I_P = \frac{4000}{100} = 40A$

$P_S = V_S I_S$

$I_S = \frac{3200}{200} = 16A$

3. Ans (1)

$B_1 = \frac{\mu_0 I}{2R_1}$

$2\pi R_1 = L$, for one loop

If two loops then

$2(2\pi R_2) = L \Rightarrow R_2 = \frac{R_1}{2}$

$B_2 = \frac{\mu_c 2I}{2R_2} = \frac{2\mu_0 I}{R_1} = 4B_1$

$B_1 : B_2 :: 1 : 4$

4. **Ans (3)**

$z=\frac{V}{I}=\frac{100}{4}=25\Omega$

$P=VI\cos\phi$

$P = VI\left(\frac{R}{Z}\right)$

$240 = 100 \times 4\times\frac{R}{25}$

$R=15\Omega$

$Z = \sqrt{R^2 + X_L{}^2}$

$X_L = 20\Omega$

$L = \frac{20}{2\pi \times 50} = \frac{1}{5\pi}H$

5. **Ans (2)**

$\phi = NBA\cos\omega t$

$\varepsilon = \frac{-d\phi}{dt} = NBA\omega\sin\omega t$

when ϕ is maximum, cos ωt is maximum and sin ωt is zero so induced emf is zero.

6. **Ans (4)**

No flux is passing through loop

7. **Ans (2)**

During the growth of current in L–R circuit is given by :

$I = I_0\left(1 - e^{-\frac{R}{L}t}\right)$

or $I = \frac{E}{R}\left(1 - e^{-\frac{R}{L}t}\right) = \frac{5}{5}\left(1 - e^{-\frac{5}{10}\times 2}\right)$

$I=(1-e^{-1})$.

8. **Ans (1)**

The pitch of the helical path of a charged particle in a region of uniform magnetic field is given by

$P = \frac{2\pi m(v\cos\theta)}{qB}$ ...(1)

The radius of the helix is

$r = \frac{mv\sin\theta}{qB}$ ...(2)

From Eq.(1) and Eq.(2) and as $\theta = 45°$, we get

$r = \frac{P}{2\pi}$

9. **Ans (4)**

$F = \frac{2IA}{c}$

10. **Ans (4)**

Energy equally shared at time

$t = \frac{T}{8}, \frac{3T}{8}, \frac{5T}{8}$..... at t = T /8

$t = \frac{1}{f \times 8} = \frac{2\pi\sqrt{LC}}{8} = \frac{\pi}{4}\sqrt{LC}$

11. **Ans (3)**

Power dissipates in resistance.

12. **Ans (1)**

$W = MB(\cos\theta_1 - \cos\theta_2) = MB(\cos 0° - \cos 60°)$

$= MB\left(1 - \frac{1}{2}\right) = \frac{MB}{2}$

and $\therefore \tau = MB\sin\theta = MB\sin 60° = MB\frac{\sqrt{3}}{2}$

$\therefore \tau = \left(\frac{MB}{2}\right)\sqrt{3} \Rightarrow \tau = \sqrt{3}W$

13. **Ans (1)**

Initially inductor opposes increase in current so B_2 lights up earlier. Final current is same in both B_1 & B_2

14. **Ans (1)**

Here,

$\vec{A} = x^2\hat{k}m^2$ and $\vec{B} = B_0(3\hat{i} + 4\hat{j} + 5\hat{k})T$

As $\phi = \vec{B}.\vec{A} = B_0(3\hat{i} + 4\hat{j} + 5\hat{k}).x^2\hat{k}$

$\therefore \phi = 5B_0 x^2$ Wb

15. **Ans (4)**

$W = MB(\cos\theta_1 - \cos\theta_2)$

$\theta_1 = 0°, \theta_2 = 360°$

$W = MB(\cos 0° - \cos 360°) = 0$

16. **Ans (4)**

$B_1 = \frac{\mu_0 i}{4}\left\{\frac{1}{R} + \frac{1}{2R}\right\}$

$B_2 = \frac{\mu_0 i}{4}\left\{\frac{1}{R} - \frac{1}{2R}\right\}$

$B_3 = \frac{\mu_0 i}{4}\left\{\frac{1}{2R} + \frac{1}{4R} - \frac{1}{3R}\right\}$

$B_4 = \frac{\mu_0 i}{4}\left\{\frac{1}{3R} + \frac{1}{4R} + \frac{1}{2R}\right\}$

So, $B_1 > B_4 > B_2 > B_3$

17. Ans (4)

No induced e.m.f. for d.c.

18. Ans (4)

Ferromagnetic property changes at curie temperature if temperature is increased.

20. Ans (3)

$F = \frac{\mu_0 I_1 I_2}{2\pi d} l$

and $F' = \frac{\mu_0}{2\pi} \frac{(-2I_1)(I_2)}{3d} l$

$\therefore \quad F = -\frac{2}{3} F$

21. Ans (1)

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

$\frac{T_1}{T_2} = \sqrt{\frac{(B_H)_2}{(B_H)_1}}$

$\frac{2}{T_2} = \sqrt{\frac{24-18}{24}} = \frac{2}{T_2} = \frac{1}{2}$

$T_2 = 4$ sec

22. Ans (2)

Radiation pressures $= \frac{2I}{C}$

Force $F = \frac{2I}{C} A$,

Momentum $= Ft = \frac{2I}{C} At = \frac{2E}{C}$

23. Ans (3)

End to end length of wire is 2L

so $F = IB(2L) \sin\theta$

$\theta = 90°$

$F = 2ILB$

24. Ans (4)

$W = MB(\cos\theta_1 - \cos\theta_2)$

$\sqrt{3} = MB(\cos 0° - \cos 60°)$

$MB = 2\sqrt{3}$

$t = MB \sin\theta = 2\sqrt{3} \times \sin 60° = 3J$

25. Ans (3)

$W = F.d\cos 90° = 0$

26. Ans (2)

When ring enters in magnetic field and when ring emerges from magnetic field in both cases direction of induced current will be opposite. When ring moves completely inside magnetic field flux is constant and induced current is zero.

27. Ans (1)

Here $\vec{E} \times \vec{B}$ is along + Z axis that is for option (1)

28. Ans (4)

$X_L = X_C$ and opposite phase

$\Rightarrow X = 0$

30. Ans (3)

$r = \frac{mv}{qB} = \sqrt{\frac{2mE}{qB}}$

$r \propto \frac{\sqrt{m}}{q}$

31. Ans (1)

Points 1,2 and 3 all are at same distance from axis of conducting tube.

$B.(2\pi r) = \mu.I$

I and r are same so B is same.

32. Ans (2)

By Lenz law

33. Ans (3)

Here, $L = 40$ mH $= 40 \times 10^{-3}$ H

$C = 25\mu F = 25 \times 10^{-6}$ F,

$\upsilon = \frac{1}{2\pi\sqrt{LC}}$

Substituting the given values, we get

$\upsilon = \frac{1}{2\pi\sqrt{40 \times 10^{-3} \times 25 \times 10^{-6}}} = \frac{10^3}{2\pi}$ Hz

$\therefore T = \frac{1}{\upsilon} = \frac{2\pi}{10^3} s = 2\pi \times 10^{-3} s = 2\pi$ ms

Energy stored is completely electrical at times

$t = 0, \frac{T}{2}, T, \frac{3}{2}T, \ldots\ldots\ldots$

Energy stored is completely magnetic at times

$t = \frac{T}{4}, \frac{3}{4}T, \frac{5}{4}T, \ldots\ldots\ldots$

Hence, $t = \frac{\pi}{2}$ ms, $\frac{3\pi}{2}$ ms, $\frac{5\pi}{2}$ ms $= 1.57,\ 4.71,$ 7.85 ms

34. Ans (3)

$U = -\vec{M}.\vec{B} = -MB\cos\theta$

θ is angle between $\vec{M}$ & $\vec{B}$

here θ is angle between $\hat{n}$ & $\vec{B}$

35. Ans (1)

$\because \tan\theta = \frac{B_V}{B_H}$

$\Rightarrow B_V = B_H \tan\theta$

$B_v = 0.6 \tan 53° = 0.8$ G

36. Ans (1)

$H_{AC} = 3H_{DC}$

$i_{rms}^2 \cdot R = 3 \quad i_{DC}^2 \cdot R$

$ims = i_{DC}(\sqrt{3}) = 2\sqrt{3}$

37. Ans (1)

In first case, $X_L = \omega L = 2\pi \times 50\ L = 100\ \pi L$

In second case, $X'L = \omega' L = 2\pi \times 100\ L$

$= 200\ \pi L = 2X_L$

$i_L = \frac{100}{X_L} = I,\ i'_L = \frac{100}{X'_L} = \frac{100}{2X_L} = \frac{I}{2}$

In R, current remains same.

38. Ans (2)

$E = \frac{M|\Delta I|}{\Delta t} = \frac{5 \times 10}{5 \times 10^{-4}} = 1 \times 10^5$ volt

39. Ans (3)

$V = \sqrt{V_R^2 + (V_L - V_C)^2} = \sqrt{(5)^2 + (10-10)^5}$

$= 5$ Volt

40. Ans (1)

Combination of inductance is same as resistance.

41. Ans (1)

$e = -\frac{d\phi}{dt} = \frac{-3B_0A_0}{t}$

42. Ans (1)

Work done in rotating a dipole from θ_1 to θ_2 from the field direction :-

$W = MB(\cos\theta_1 - \cos\theta_2)$

$= MB(\cos 30° - \cos 45°)$

$= 4 \times 5 \times 10^{-4}\left(\frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}}\right) = 3.2 \times 10^{-4}$J

43. Ans (1)

$Z = \sqrt{R^2 + (X_L - X_C)^2} = \sqrt{18^2 + (40-16)^2}$

$= \sqrt{18^2 + 24^2} = \sqrt{900} = 30$

44. Ans (4)

dc ammeter reads average rate of flow of charge that is zero for ac.

45. Ans (3)

$\tau = MB \sin 0° = 0$

48. Ans (3)

NCERT XIIth Pg # 179, fig. 7.4

51. Ans (4)

Zn has $3d^{10}$ configuration so 3d electron do not take part in metallic bond.

54. Ans (1)

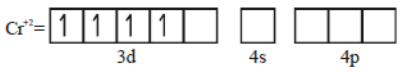
In BF_3, pπ-pπ back bonding is present.

56. Ans (4)

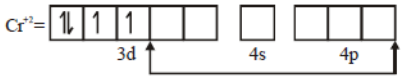
[+ve charge on central atom $\propto$ splitting energy]

59. Ans (3)

$[Cr(NH_3)_6]^{+2}$



Strong field ligand present



d^2sp^3

Paramagnetic

62. Ans (1)

$[Ma_2(AA)_2]$ and $[Mab(AA)_2]$ has 3 stereo-isomers (2GI & 2OI)

63. Ans (1)

In alkanline medium stable oxidation state of Mn is + 6, So MnO_4^- is reduced to MnO_4^{-2} and I^- is oxidised to IO_3^-.

$6MnO_4^- + I^- + 6OH^- \rightarrow 6MnO_4^{-2} + IO_3^- + 3H_2O$

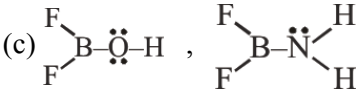
$2MnO_4^- + H_2O + I^- \rightarrow 2MnO_2 + 2OH^- + IO_3^-$

65. Ans (4)

$[Cr(en)_3]Cl_3 \rightarrow [M(AA)_3]$ type show O.I.

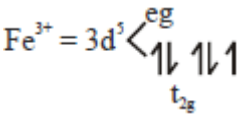
68. **Ans (4)**
NCERT Pg # 200

71. **Ans (2)**
(a) $P(SiH_3)_3$ No. B.B.

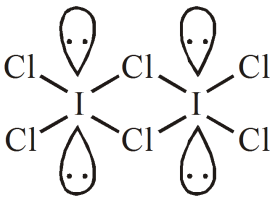
(c)  ,

Donor Tendency→N>O

74. **Ans (3)**
$BeCl_2(s) \rightarrow$ Polymer (sp^3)

77. **Ans (4)**


80. **Ans (3)**
$I_2Cl_6 \rightarrow$



Hybridisation – sp^3d^2 (4σ + 2LP) – planar

83. **Ans (1)**
In diamond carbon is sp^3 hybridised bond length is max.

85. **Ans (2)**
$KMnO_4$ is coloured due to charge-transfer.

102. **Ans (3)**
NCERT-XII, Pg. No. # 101

104. **Ans (2)**
NCERT XII Pg.# 214 (E), 235 (H)

108. **Ans (2)**
NCERT-XII, Pg. # 209

116. **Ans (1)**
NCERT XII, Pg. # 213

120. **Ans (1)**
NCERT, Page#70-71

123. **Ans (3)**
NCERT (XIIth) Pg. # 83

126. **Ans (4)**
NCERT (XIIth) Pg. # 83

132. **Ans (1)**
NCERT Page-181, 183, 184

133. **Ans (2)**
NCERT XII, Pg.#214

136. **Ans (1)**
NCERT-XII Pg. No. # 108 Para- 108 Fig. 6.9

139. **Ans (4)**
Module No. 2- Pg. No. # 125

141. **Ans (2)**
NCERT-XII, Pg # 194 (E)

142. **Ans (4)**
NCERT-XII, Page # 89

147. **Ans (4)**
NCERT XIIth Pg.# 170 (E)

151. **Ans (1)**
NCERT Pg. # 83, para-5.3.3

152. **Ans (4)**
NCERT-XII Pg. No 195

157. **Ans (2)**
NCERT XII, Pg. # 198

159. **Ans (2)**
NCERT XII, Pg. # 181

163. **Ans (3)**
Module No. 2- Pg. No. # 125

178. **Ans (2)**
NCERT-XII, Pg. No. 89