Enthusiast, Leader & Achiever course

PHASE : (All Phase)

TARGET : PRE-MEDICAL-2021

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

TEST DATE : 25-06-2020

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

HINT – SHEET

2. **Ans (3)**

Mass decay $\Delta m = \frac{E}{c^2} = \frac{(1000 \times 10^3)(3600)}{(3 \times 10^8)^2}$

$= 4 \times 10^{-8}$ kg $= 40$ μg

3. **Ans (2)**

1 gamma photon → elect + posit + KE

Energy of gamma photon = Energy of electron + Energy of positron + KE of e - p pair

= 0.5 + 0.5 + 0.78 = 1.78 MeV

4. **Ans (2)**

Induced emf $\varepsilon = -\frac{d\phi}{dt}$

$\varepsilon = -\frac{d}{dt}(B.\pi a^2) = -\pi a^2 \frac{dB}{dt}$ .....(1)

Potential difference

$\varepsilon = -\int_0^{2\pi r} E.dr = -E.2\pi r$ .....(2)

by equation (1) & (2)

$E.2\pi r = \pi a^2 \frac{dB}{dt}$

$E \propto \frac{1}{r}$

5. **Ans (2)**

$\varepsilon = \frac{-LdI}{dt} \Rightarrow 200 = L\left(\frac{5}{0.1}\right)$

$\Rightarrow L = 4H$

6. **Ans (4)**

Coil is parallel to the axis of solenoid so no flux through it.

So M = 0

7. **Ans (4)**

Electric & magnetic field vectors are perpendicular to each other so option (4) is false.

8. **Ans (2)**

In N-type semiconductor majority charge carriers are electrons which are negative so N-type. In P-type semiconductor majority charge carriers are holes which are positive so P-type. But overall atom and material is neutral.

9. Ans (2)

In reverse bias no flow of charge carriers in depletion layer of a P-N junction so it acts like insulating zone under reverse bias.

10. Ans (1)

In reverse biased P-N junction diode, if doping level is small then width of depletion layer is large and breakdown occurs when potential difference is large so large velocity of the minority charge carriers.

11. Ans (1)

$i = 2 + 3\sin\omega t$

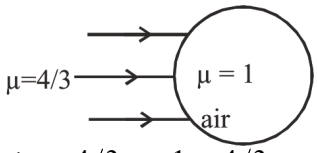
$i_{rms} = \sqrt{2^2 + 3^2/2} = \sqrt{17/2}$

12. Ans (3)

Current in LCR circuit becomes highest at resonance when

$X_C = X_L$

13. Ans (1)



$$\frac{1}{v} - \frac{4/3}{\infty} = \frac{1-4/3}{2} = \frac{-1}{6}$$

$v = -6\text{cm}$

14. Ans (3)

$$\frac{1}{f_{eq}} = \frac{-2}{f_L} + \frac{-2}{f_M} = 2(\mu-1)\left(\frac{1}{R} + \frac{1}{R}\right) - \frac{2}{R}$$

$$= \frac{-2}{R}[2u - 2 + 1]$$

$$\frac{1}{f_{eq}} = \frac{-2}{R}2(\mu-1)$$

$$\frac{-R}{2(2\mu-1)} = f_{eq}$$

$$\text{dist.} = 2f \Rightarrow \frac{R}{2\mu-1}$$

15. Ans (4)

$$\frac{\omega_1}{\omega_2} = \frac{-f_1}{f_2}$$

$$\Rightarrow \frac{0.02}{0.04} = \frac{-f_1}{-80} \qquad \Rightarrow f_1 = 40\text{ cm}$$

16. Ans (2)

$$\text{Magnification } M = \frac{f_0}{f_e} = \frac{60}{5} = 12$$

$$M = \frac{\beta}{\alpha} = \frac{\text{Angular width of image}}{\text{Angular width of object}}$$

$\beta = M\alpha = 12 \times 2^\circ = 24^\circ$

17. Ans (1)

For lens u = wants to see = –30 cm

and v = can see = –10 cm

$$\therefore \frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{-10} - \frac{1}{(-30)} \Rightarrow f = -15\text{ cm}$$

18. Ans (4)

use $B = \frac{\mu_0 I}{4\pi d}(\sin\theta_1 + \sin v_2)$

19. Ans (3)

$B = \mu_0 nI$

20. Ans (1)

Direction will remain same. But magnitude reduces to $\frac{F}{4}$

21. Ans (1)

$$\frac{\mu_0 i_1 i_2}{2\pi d} = \left(\frac{m}{\ell}\right)g$$

$$i_2 = \frac{m}{\ell} \times g \times \frac{2\pi d}{\mu_0 i_1}$$

$i_2 \approx 20\text{A}$

22. Ans (2)

$$\frac{\text{Shift}}{D} = \frac{\text{Path difference}}{d}$$

$$\text{Shift} = \frac{t(\mu-1)D}{d}$$

$$= \frac{2.5 \times 10^{-5}(1.5-1) \times 1.00}{0.5 \times 10^{-3}}$$

$= 2.5 \times 10^{-2}\text{m} = 2.5\text{ cm}$

23. Ans (4)

For first minimum $\sin\theta = \frac{\lambda}{a}$

$$\text{Slit width } a = \frac{\lambda}{\sin\theta}$$

$$= \frac{5 \times 10^{-7}}{\sin 30^0} = 10^{-6}\text{m}$$

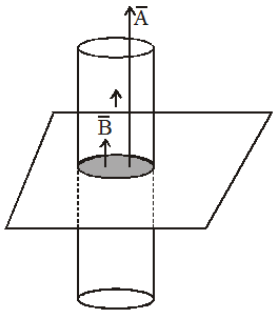
$a = 10 \times 10^{-5}\text{ cm}$

24. Ans (3)

$\mu = \tan i_p = \tan 60°$

$v = \dfrac{3 \times 10^8}{\tan 60^0} = \sqrt{3} \times 10^8$

25. Ans (4)



Magnetic field due to the solenoid is along its length so $\theta = 0°$

$\phi = B.A.$

$= 200 \times 15 \times 10^{-4}$

$= 0.3$ Wb

26. Ans (1)

$\phi = MI$

$\Rightarrow \dfrac{d\phi}{dt} = \dfrac{M dI}{dt}$

$\Rightarrow M = \dfrac{d\phi}{dI} = \dfrac{2 \times 10^{-2}}{0.01} = 2H$

27. Ans (1)

The emf induced in the rod causes a current to flow anticlockwise direction in the circuit, Because of this current in the rod, it experiences a force to the left due to the magnetic field. In order to pull the rod to the right with constant speed, this force must be balanced by the puller.

The emf induced in the rod is

$|\varepsilon| = B\ell v = (0.15\ T)\ (0.5\ m)\ (2\ m\ s^{-1})$

$= 0.15$ V

Current induced in the rod is

$I = \dfrac{|\varepsilon|}{R} = \dfrac{0.15V}{3\Omega} = 0.05A$

$\therefore F = I\ell B \sin 90°$

$= (0.05\ A)\ (0.5\ m)\ (0.15\ T)\ (1)$

$= 3.75 \times 10^{-3}$ N

28. Ans (4)

$\dfrac{1}{2} mv^2 = E - \phi$

$= \left[\dfrac{12400}{3000} - 1\right] ev$

$v = 10^6$ m/s

29. Ans (2)

$\lambda \propto \dfrac{1}{\sqrt{V}} \Rightarrow \dfrac{\lambda_2}{\lambda_1} = \sqrt{\dfrac{V_1}{V_2}}$

$\dfrac{\lambda_2}{10^{-10}} = \sqrt{\dfrac{150}{600}} = 0.5$

$\lambda_2 = 0.5 \times 10^{-10} m = 0.5$ Å

30. Ans (4)

$T^2 \propto$ (Radius of the orbit)^3

$\therefore \dfrac{T_1^2}{T_2^2} = \dfrac{R^3}{(4R)^3} = \dfrac{1}{64}$

or $\dfrac{T_1}{T_2} = \dfrac{1}{8}$

31. Ans (2)

$\cos\phi = \dfrac{R}{Z} = \dfrac{R}{(R^2 + \omega L^2)^{1/2}}$

32. Ans (1)

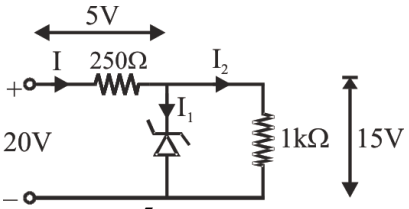
$f = \dfrac{1}{2\pi\sqrt{LC}}$

$f = \dfrac{1}{2\pi\sqrt{2L \times 4C}}$

$= \dfrac{1}{2 \times 2\pi\sqrt{2}\sqrt{LC}}$

$= \dfrac{f}{2\sqrt{2}}$

33. Ans (1)



Here $I = \dfrac{5}{250}$ A = 20 mA

$I_2 = \dfrac{15}{1 \times 10^3}$ A = 15 mA

so $I_1 = I - I_2 = 5$ mA

34. Ans (3)

We consider forward biased diode as short circuit

So $I = \frac{E}{R}$

(through lower most diode no current through upper diodes.)

35. Ans (3)

Given combination equivalent to

$y = \overline{\overline{A} + \overline{B}} = \overline{A} \cdot \overline{B} = A \cdot B$

36. Ans (1)

$\vec{M} = \frac{I\pi R^2}{2}[-\hat{i} - \hat{j}]$

$\vec{B} = B_0[\hat{i} + \hat{j}]$

$\vec{M} || \vec{B} \Rightarrow \vec{\tau} = 0$

37. Ans (2)

$\tau = MB_H \sin\theta \Rightarrow 0.032 = M \times 0.16 \times \sin 30^\circ$

$\Rightarrow M = 0.4 J/tesla$

38. Ans (2)

In order to obtain the neutral point at the centre of a current circular coil, the magnetic field produced by the coil must be equal to B_H in magnitude and directed opposite to $\vec{B}_H$.

$B = \frac{\mu_0 Ni}{2R} = B_H$

$\therefore \quad i = \frac{2RB_H}{\mu_0 N} = \frac{2 \times 0.1 \times 0.314 \times 10^{-4}}{4\pi \times 10^{-7} \times 10}$

$= 0.5$ A

39. Ans (3)

By theory

40. Ans (1)

11:60 – 8:20 = 3:40

41. Ans (2)

$\frac{m_2}{m_1} = 3$

$\frac{f/f-9}{f/f-15} = 3$

$\frac{f-15}{f-9} = 3$

$\Rightarrow f = +6$ cm

42. Ans (1)

Apply Snell's law for n_1 and n_3

$1 \times \sin 45^\circ = \sqrt{2} \sin r$

$\sin r = \frac{1}{2} \Rightarrow r = 30^\circ$

43. Ans (3)

$\delta_m = A$

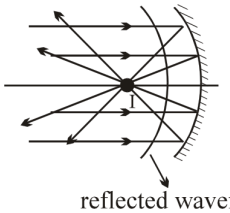
$\mu = \frac{\sin(\frac{A+\delta_m}{2})}{\sin(\frac{A}{2})} = 2\cos(A/2)$

$\sqrt{3} = 2\cos(A/2)$

$A = 60^\circ$

44. Ans (3)

Make reflected rays & perpendicular to reflected rays will be reflected wavefront



45. Ans (3)

$\beta = \frac{\lambda D}{d} \Rightarrow \frac{\beta_2}{\beta_1} = \frac{\lambda_2}{\lambda_1}$

$\beta_2 = \beta_1 \frac{\lambda_2}{\lambda_1}$

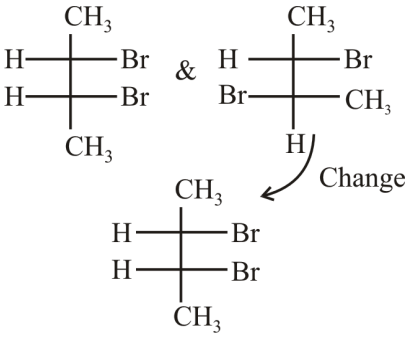
$= 1.0 \times 10^{-3} \times \frac{6000 \times 10^{-10}}{5000 \times 10^{-10}}$

$\beta_2 = 1.2 \times 10^{-3} m = 1.2$ mm

46. Ans (2)

NCERT XII Pg.# 256 Part I

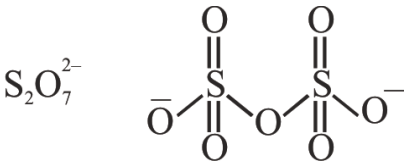
48. Ans (4)



53. Ans (2)

$[Cu(NH_3)_4]^{+2}$, $Cu^{+2} = 3d^9 \rightarrow$ 1 unpaired e^- present

59. Ans (4)



No. S–S linkage

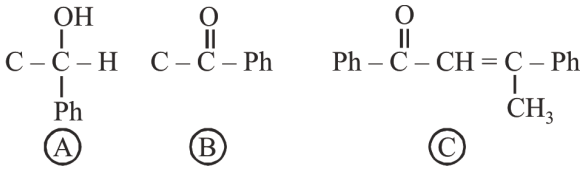
65. Ans (1)

Fact

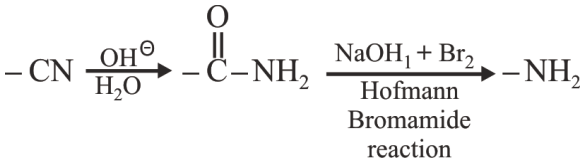
66. Ans (3)

Metal sulphide + O_2 → Metal oxide + SO_2
(air)

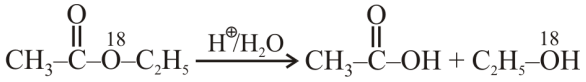
68. Ans (4)



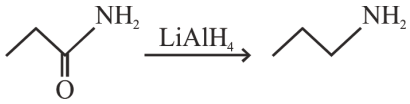
69. Ans (1)



84. Ans (2)



85. Ans (4)



98. Ans (4)

NCERT XII Pg. # 157,158 Para-8.4

102. Ans (4)

NCERT (XIIth) Pg. # 160

111. Ans (2)

NCERT XIIth Pg.#99(E), 107(H) Figure-6.4(a)

116. Ans (1)

NCERT XII Pg. # 119

118. Ans (2)

NCERT-XII, Pg. # 174, 175

122. Ans (2)

NCERT-XII, Pg # 194 (E)

127. Ans (2)

NCERT (XIIth) Pg. # 198 (Para 11.2.1)

128. Ans (4)

NCERT Pg.# 181

130. Ans (1)

NCERT XII, Pg. # 185

132. Ans (1)

NCERT (XIIth) Pg. # 209

133. Ans (4)

NCERT (XII) Pg. # 212

138. Ans (2)

NCERT(XII) Pg # 167/181(H) Fig:9.1 (a)

145. Ans (3)

NCERT Pg. # 235

149. Ans (4)

NCERT XIIth Pg.# 221

157. Ans (3)

NCERT XIIth Pg.# 225

162. Ans (3)

NCERT, Pg. # 253, Fig. 14.6

176. Ans (1)

E.coli, sewage fungus, blood worm, Tubifax and sludge worm are present in polluted water while daphnia, Troust fish are present in fresh water.

178. Ans (2)

NCERT-XII, Pg. # 275