Enthusiast, Leader & Achiever Course

PHASE : ALL PHASE

TARGET : PRE-MEDICAL 2020

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

TEST DATE : 20-08-2020

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

HINT – SHEET

1. Ans (3)

$n_1\lambda_1 = n_2\lambda_2$

$n_1 \times 750 \times 10^{-9} = n_2 \times 900 \times 10^{-9}$

$\frac{n_1}{n_2} = \frac{6}{5}$ $\quad n_1 = 6, n_2 = 5$

$x_1 = \frac{n_1 D\lambda_1}{d}$

$x_1 = \frac{6 \times 2 \times 750 \times 10^{-9}}{2 \times 10^{-3}}$

$x_1 = 4.5$ mm

2. Ans (2)

$\phi = 0$

$I' = 4I_0$

$\phi = \pi/2$

$I'' = 2I_0$

$I = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\phi$

3. Ans (2)

$(\mu - 1)A + (\mu' - 1)A' = 0$

$(1.52 - 1) \times 10 + (1.72 - 1)A' = 0$

$A' = -\frac{0.52 \times 10}{0.72} = -7.22$

4. Ans (3)

For no TIR $\quad 45° \le \theta_c \quad \Rightarrow \quad \sin 45° \le \sin\theta_C$

$\Rightarrow \frac{1}{\sqrt{2}} \le \frac{1}{\mu} \qquad \Rightarrow \quad \mu \le \sqrt{2}$

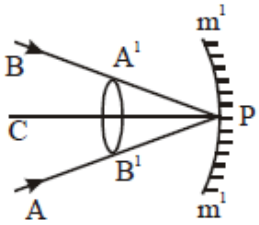
5. **Ans (1)**

Sun is very distant, v is very large and so $\left(\frac{1}{v}\right)$ is practically zero.

$$\frac{1}{v}+\frac{1}{u}=-\frac{1}{f}$$

$$\frac{1}{v}+\frac{1}{\infty}=\frac{-1}{f}$$

$$\frac{1}{v}+0=-\frac{1}{f}$$

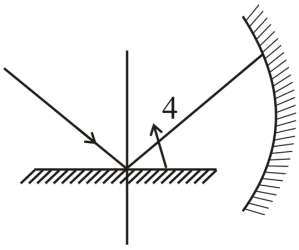


$\frac{1}{v}=-\frac{1}{f}$ i.e. the image of sun will be formed at the focus and will be roul, inverted and diminished now as the rays from the sun subtend an angle θ radium at pole,
Hence according to figure,

$$\theta=\frac{A^1B^1}{FP}=\frac{d}{f}$$ (d = diameter of image of sun)

$$\boxed{d=f\theta}$$

6. **Ans (2)**



v = wR

v = w(R)

= 4(10) = 40 m/s

7. **Ans (2)**

As magnetic susceptibility $X_m \propto \frac{1}{T}$, therefore

$$\frac{X_2}{X_1}=\frac{T_1}{T_2}=\frac{X_2}{0.0060}=\frac{273-73}{273-173}=\frac{200}{100}=2$$

$X_2 = 2 \times 0.0060 = 0.0120$

8. **Ans (2)**

$$T = 2\pi\sqrt{\frac{I}{M_B}} \qquad I=\frac{m\ell^2}{12}$$

$$\therefore\ T \propto \sqrt{m} \qquad \frac{T_2}{T_1}=\sqrt{\frac{4m}{m}}$$

$\Rightarrow T_2 = 2T_1$

9. **Ans (3)**

Smaller the angle between dipole moments, more will be the resultant dipole moment.

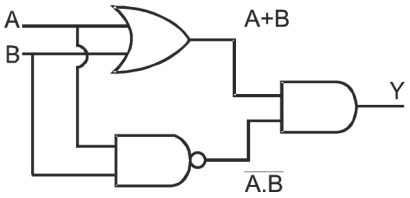
10. **Ans (2)**

$$B=\frac{\mu_0 i}{2R}$$

$M = \pi R^2 i$

$$\Rightarrow M=\frac{2\pi BR^3}{\mu_0}$$

11. **Ans (3)**



$Y = (A+B).(\overline{A.B})$

$= (A+B).(\bar{A}+\bar{B})$

$Y = A.B + \bar{A}.B$ (XOR)

12. **Ans (3)**

$V_{CC} - I_C R_C - V_{CE} = 0$

$\Rightarrow 10 - I_C \times 10^3 - 5 = 0$

$\Rightarrow I_C \times 10^3 = 5$

$\Rightarrow I_C = 5 \times 10^{-3}$ A

$\Rightarrow I_C = \beta I_B$

$$I_B=\frac{5\times10^{-3}}{100}=5\times10^{-5}A$$

$V_{CC} - I_B R_B - V_{BE} = 0$

$10 - 5 \times 10^{-5} \times R_B - 0 = 0$

$$R_B=\frac{10}{5\times10^{-5}}=2\times10^5=200k\Omega$$

13. **Ans (1)**

$$I=\frac{18-6}{500\Omega}=24mA$$

$$I_1=\frac{6}{1\,K\Omega}=6\,mA$$

$I_2 = (24 - 6)$ mA

= 18 mA

14. Ans (1)

$$\left|\frac{dI}{dt}\right| = q_0\omega^2 \cos\omega t$$

$$\left|\frac{dI}{dt}\right|_{max} = \frac{q_0}{LC}$$

16. Ans (1)

Energy of a hydrogen atom like He^+ in an nth orbit is given by

$$E_n = -\frac{13.6Z^2}{n^2}\ eV$$

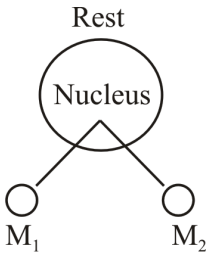
For He^+ ion, $Z = 2$, $E_n = \frac{-4(13.6)}{n^2}eV$

for first excited state, $n = 2$

$$\therefore \quad E_2 = -\frac{4(13.6)}{(2^2)}eV = -13.6\ eV$$

Hence the energy in He^+ ion in first excited state is same that of energy of the hydrogen atom in ground state i.e. – 13.6 eV

17. Ans (4)



by momentum conservation

$P_i = P_f$

$0 = P_1 + P_2$

$P_1 = -P_2$

$\lambda = \frac{h}{P}$

If P same λ same

18. Ans (4)

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

$$= \left[\frac{12400}{3000} - 1\right] eV$$

$v = 10^6$ m/s

19. Ans (4)

When S is closed a clockwise current grows in loop P so an anticlockwise current is induced in loop Q.

When S is opened the clockwise current in P decreases to oppose the change in flux a clockwise current is induced in loop Q.

21. Ans (1)

$$\phi = \vec{B}.\vec{A} = 5\hat{k}.(10 \times 6 \times 10^{-4}\hat{k})$$

$= 300 \times 10^{-4} = 30$ mWb

22. Ans (3)

From Brewster's law $\mu = \tan i_P$

$$\Rightarrow \frac{c}{v} = \tan 60^\circ = \sqrt{3}$$

$$\Rightarrow v = \frac{c}{\sqrt{3}} = \frac{3 \times 10^8}{\sqrt{3}} = \sqrt{3} \times 10^8 m/s$$

23. Ans (1)

$$x = \frac{n\lambda D}{d} \quad \text{for first minima, } n = 1$$

$$\Rightarrow d = \frac{\lambda D}{x} = \frac{5 \times 10^{-7} \times 2}{5 \times 10^{-3}}$$

$\Rightarrow d = 0.2$ mm

24. Ans (1)

$\because$ Central fringe at same position.

$\therefore$ Path difference $(\Delta x) = 0$

Now $(\mu_1 - 1)t_1 = (\mu_2 - 1)t_2$

$$(1.5–1) \times 1.2 = (2.5–1)t_2$$

$$t_2 = \frac{0.5 \times 1.2}{1.5} = 0.4\mu m$$

25. Ans (3)

$$\vec{F} = i(\vec{\ell} \times \vec{B})$$

$$\vec{F} = (i)(2\vec{\ell}\hat{i} \times Bt\hat{k})$$

$$\vec{F} = 2Bi\ell\hat{j}$$

26. Ans (3)

for crossing limited mag. field

R > depth of mag. field

R > (b–a)

$$\frac{mV}{qB} > b - a$$

$$V > \frac{qB\,(b-a)}{m}$$

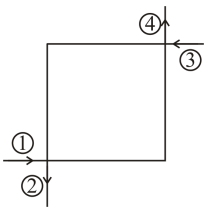
27. Ans (1)

$$\vec{M} = \sqrt{M_1^2 + M_2^2 + 2M_1M_2\cos\theta}$$

$$= 2M\cos\frac{\theta}{2}$$

θ M′↓

28. Ans (2)



B due to (1) and (4) will be 0

(2) and (3) are semi infinite

$$B = \frac{\mu_0 i}{4\pi a}\odot + \frac{\mu_0 i}{4\pi a}\odot$$

$$= \frac{\mu_0 i}{2\pi a}\odot$$

29. Ans (2)

$$P = \frac{100}{f}$$

$$f = \frac{100}{0.66} = 151.5\text{cm concave lens.}$$

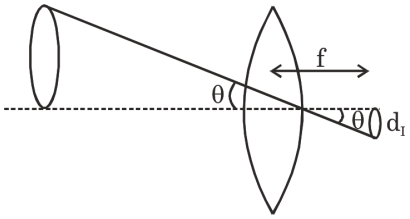
31. Ans (4)

$$\frac{w_1}{w_2} = \frac{4}{3} = \frac{-f_1}{f_2}$$

$$f_1 = -\frac{4}{3}f_2$$

$$\frac{1}{60} = \frac{1}{(-\frac{4}{3}f_2)} + \frac{1}{f_2}$$

32. Ans (2)



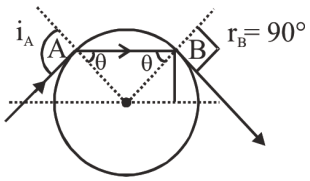
$$\frac{d_I}{f} = \theta$$

$$d_I = f\theta = 100 \times 10^{-2} \times 1/2 \times \frac{\pi}{180}$$

= 0.87 cm = 8.7 mm ≈ 9 mm

Concave mirror can form both inverted and erect image which is enlarged.

33. Ans (4)



Angle of refraction at A = angle of incident at B

Angle of incidence at A = Angle of refraction at B which is 90° for grazing emergence

34. Ans (2)

X_L = 20Ω at 50Hz

Thus at 100Hz X_L becomes = 40Ω

$$Z = \sqrt{R^2 + X_L^2} = \sqrt{30^2 + 40^2} = 50\Omega$$

$$I_{rms} = \frac{V_{rms}}{Z} = \frac{200}{50} = 4A$$

35. Ans (4)

A.C. meters are based on heating effect of current.

so their scale ∝ I^2 (Non linear)

they can measure D.C. also

D.C. meter are charge based

so they cannot measure A.C. as net charge is zero

36. Ans (2)

$D_1 \rightarrow$ R.B., $D_2 \rightarrow$ F.B.

So, 2kΩ & 2kΩ is in series

40. Ans (1)

$$B_{net} = \sqrt{B_1^2 + B_2^2} = \frac{\mu_0}{4\pi}.\frac{2\pi}{r}\sqrt{i_1^2 + i_2^2}$$

$$= 10^{-7} \times \frac{2\pi}{2\pi \times 10^{-2}}\sqrt{(3)^2 + (4)^2}$$

$$= 5 \times 10^{-5} wb/m^2$$

41. Ans (3)

At $t = 0$ $\quad R_{eq} = 10$

At $t \rightarrow \infty$ $\quad R_{eq} = 5$

$i_{max} - i_{min} = 1A$

$$i_{min} = \frac{10}{10} = 1A$$

$$i_{max} = \frac{10}{5} = 2A$$

42. Ans (2)

If the radius is r at a time t, then the instantaneous magnetic flux ϕ is given by:

$$\phi = \pi r^2 B$$

Now, induced emf e is given by:

$$e = -\frac{d\phi}{dt} = -\frac{d}{dt}(\pi r^2 B)$$

$$= -\pi B\left(2r\frac{dr}{dt}\right) = -2\pi Br\left(\frac{dr}{dt}\right)$$

Induced emf $= 2\pi Br\left(\frac{dr}{dt}\right)$ numerically as (dr/dt) is negative.

43. Ans (1)

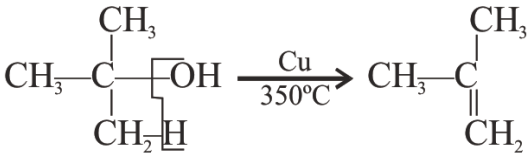
$\lambda_A = 8\lambda$, $\lambda_B = \lambda$

$$\Rightarrow \quad N_B = \frac{N_A}{e} \Rightarrow N_0 e^{-\lambda t} = \frac{N_0 e^{-8\lambda t}}{e}$$

$$\Rightarrow \quad -\lambda t = -8\lambda t - 1 \Rightarrow 7\lambda t = -1 \Rightarrow t = -\frac{1}{7\lambda}$$

Best answer is $t = \frac{1}{7\lambda}$

46. Ans (4)

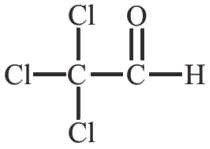


2-Methyl propene

48. Ans (4)

Rate of $S_N1 \propto$ stability of carbocation.

52. Ans (3)


(it gives haloform reaction)

54. Ans (2)

Only primary amines are product in gabriele reaction

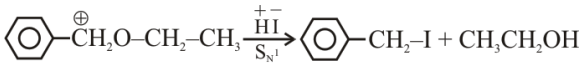
60. Ans (4)

$$Ph - \overset{14}{C}OOH + NaHCO_3 \rightarrow CO_2$$

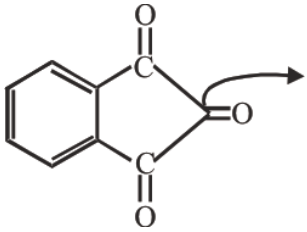
62. Ans (2)

Rate of ArS_N2 α –I/–M group

64. Ans (3)



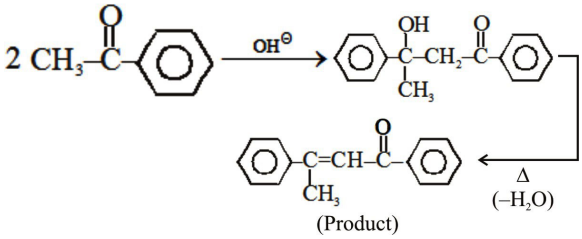
70. Ans (2)


This carbon has maximum electrophilicity

71. Ans (1)

Cross Aldol reaction

72. Ans (3)


(Product)

88. Ans (4)

$HgS + O_2 \rightarrow HgO + SO_2$

(limited)

$HgS + HgO \rightarrow Hg + SO_2$

93. Ans (2)

Module-3, page No. 182

94. Ans (3)

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96. Ans (1)

NCERT Pg # 167, Para-9.12, Fig. 9.1(a)