Enthusiast, Leader & Achiever Course

PHASE : ALL PHASE

TARGET : PRE-MEDICAL 2020

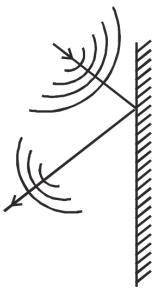
Test Type : **MAJOR** Test Pattern : **NEET (UG)**

TEST DATE : 08-08-2020

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

HINT – SHEET

1. Ans (3)



2. Ans (2)

Since there is no shift in central maxima,

therefore path difference introduced by the two sheets are equal

i.e. $(\mu_1 - 1)\, t_1 = (\mu_2 - 1)t_2$

where μ_1 and μ_2 are refraction index

i.e.

$$\frac{t_1}{t_2} = \frac{(\mu_2 - 1)}{(\mu_1 - 1)} = \frac{1.5 - 1}{1.25 - 1} = \frac{0.5}{0.25} = 2$$

3. Ans (3)

$$I = I_0 \cos^2\left(\frac{\Delta\phi}{2}\right) \Rightarrow \Delta\phi = \frac{2\pi}{\lambda}\Delta x$$

$$I = I_0 \cos^2\left(\frac{\pi}{\lambda}\Delta x\right)$$

$$I = I_0 \cos^2\left(\frac{\pi}{\lambda}\frac{xd}{D}\right) \quad \left| \beta = \frac{D\lambda}{d}\right.$$

$$I = I_0 \cos^2\left(\frac{\pi x}{\beta}\right)$$

4. Ans (3)

$$y = \frac{3\lambda D}{2a} = \frac{3\lambda f}{2a}$$

$$= \frac{3 \times 5 \times 10^{-5} \times 60}{2 \times 0.02}$$

$$= 0.225 \text{ cm}$$

5. Ans (2)

$y = x_2 - x_1$

$$y = \frac{2D\lambda}{a} - \frac{1D\lambda}{a} = \frac{D\lambda}{a}$$

$$a = \frac{D\lambda}{y} = \frac{3 \times 5000 \times 10^{-10}}{2 \times 10^{-3}}$$

$= 7500 \times 10^{-7} = 0.75$ mm

6. Ans (4)

$I = I_0\cos^2\theta$ $\quad I_{max.}$ $\theta = 0°, 180°$

$I_{min.}$ $\theta = 90°, 270°$

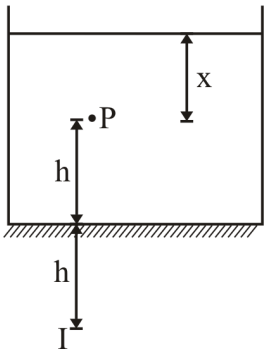
7. Ans (4)

$I_{max} \propto A^2 \propto$ (slit width)^2

$I' = (2a)^2 = 4a^2 = 4I_0$

8. Ans (2)

• O



Apparent depth for object

$$d_{ap_1} = \frac{x}{\mu}$$

Apparent depth for image

$$d_{ap_2} = \frac{2h + x}{\mu}$$

Apparent distance between object and its image

$$\Rightarrow d_{ap_2} - d_{ap_1} = \frac{2h + x}{\mu} - \frac{x}{\mu}$$

$$= \frac{2h}{\mu}$$

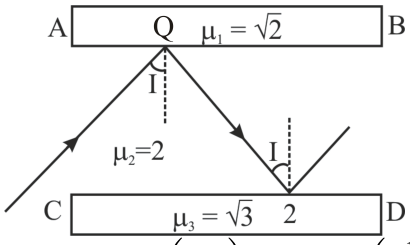
9. Ans (2)

$$m = \frac{-15}{-15 - (20)} = -3$$

$A_i = m^2A_0 = (-3)^2(1\ cm^2) = 9\ cm^2$

10. Ans (1)

Critical angles at 1 and 2



$$\theta_{C_1} = \sin^{-1}\left(\frac{\mu_1}{\mu_2}\right) = \sin^{-1}\left(\frac{1}{\sqrt{2}}\right) = 45^0$$

$$\theta_{C_2} = \sin^{-1}\left(\frac{\mu_3}{\mu_2}\right) = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = 60^0$$

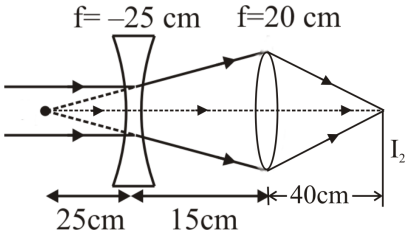
Therefore, minimum angle of incidence for total internal reflection to take place on both slabs should be 60°

11. Ans (1)

$$\mu = \frac{\sin 60}{\sin\ 60/2} = \sqrt{3}$$

12. Ans (3)

I_1 is object for convex lens



u = – 40 cm, f = +20 cm

$$v = \frac{uf}{u + f} = \frac{-40 \times 20}{-20}$$

= +40 cm

13. Ans (1)

$P_{eq} = 2P_\ell + P_m$

$$-\frac{1}{f_{eq}} = \frac{2}{F_\ell} + \frac{1}{F_m}$$

$$-\frac{1}{f_{eq}} = \frac{2}{-20} + \frac{1}{\infty}$$

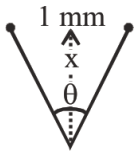
f_{eq} = 10 cm (convex mirror)

14. Ans (1)

$$\text{Chromatic abberation} = \omega \times f_y = \frac{\mu_v - \mu_R}{\mu_y - 1} \times f_y$$

$$= \frac{1.66 - 1.62}{1.64 - 1} \times 10 = \frac{0.04}{0.64} \times 10 = 0.625$$

15. Ans (3)



$y = 1mm$

Resolution limit $= \theta = \frac{y}{x} = 1.22\frac{\lambda}{d}$

$x = \frac{yd}{1.22\lambda}$

$= \frac{10^{-3} \times 3 \times 10^{-3}}{1.22 \times 5 \times 10^{-7}}$

$= \frac{30}{6.1} \approx 5m$

16. Ans (2)

$v = -60 \quad u = -12$

$f = 15 \quad p = \frac{20}{3}D$

17. Ans (2)

Before forming the image light rays will cross the slab twice hence distance decreased between object and image due to slab.

$2\left[6 - \frac{6}{3/2}\right] = 4\,cm$

without slab distance between image and mirror = 20 cm hence now distance between mirror and image = 20 – 4 = 16 cm

18. Ans (2)

$v_{max} = 4 \times 10^8$ cm/s $= 4 \times 10^6$ m/sec.

$\therefore K_{max} = \frac{1}{2}mv_{max^2}$

$= \frac{1}{2} \times 9 \times 10^{-31} \times (4 \times 10^6)^2$

$= 7.2 \times 10^{-18}$ J $= 45$ eV.

Hence, stopping potential,

$|V_0| = \frac{K_{max}}{e} = \frac{45eV}{e} = 45$ volt.

19. Ans (3)

$\lambda = \frac{h}{\sqrt{2km}}$

(i) k of electron will increase hence λ decrease

(ii) k of electron will remain constant hence

$\lambda \rightarrow$ constant

20. Ans (3)

$\Delta E = Rhc\left[1 - \frac{1}{25}\right] = \frac{24Rhc}{25}$

$p_{photon} = \frac{\Delta E}{C} = \frac{24hR}{25} = P_{atom} = mv$

$V = \frac{24hR}{25m}$

21. Ans (4)

Minimum wavelength of continuous X-ray spectrum is

$\lambda_{min}(Å) = \frac{12375}{E(eV)} = \frac{12375}{80 \times 10^3} \approx 0.155$

here energy of the incident electrons 80 KeV is more than ionization energy of k-shell electrons is 72.5 KeV. So characteristics X-ray spectrum will also be obtained because energy of incident electron is enough to knock out the electron from K or L shells.

22. Ans (3)

$R \propto A^{1/3} \Rightarrow$

$\frac{R_1}{R_2} = \left(\frac{16}{128}\right)^{1/3} \Rightarrow \frac{3 \times 10^{-15}}{R_2} = \frac{1}{2}$

$R_2 = 6 \times 10^{-15}$ m

23. Ans (3)

$_nX^m \xrightarrow{\alpha} {}_{n-2}Y^{m-4} \xrightarrow{2\beta} {}_nX^{m-4}$

24. Ans (2)

Recoil energy $= \frac{p^2}{2M}$

$p = \frac{h}{\lambda} = \frac{h\nu}{c} \Rightarrow$ Recoil energy $= \frac{h^2\nu^2}{2Mc^2}$

25. Ans (2)

For maxima $\Delta = d\sin\theta = n\lambda$

$\Rightarrow 2.5\lambda\sin\theta = n\lambda \Rightarrow \sin\theta = \frac{n}{2.5}$

since value of sin θ can not be greater 1.

$\therefore n = 0, 1, 2$

Therefore only five maximas can be obtained on both side of the screen.

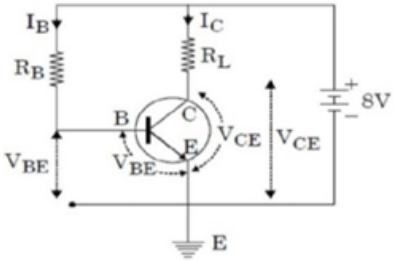
26. Ans (2)

$\frac{5\lambda D}{d} = \frac{2\lambda D}{d'}$

$d' = \frac{2d}{5} = \frac{2 \times 1}{5} = 0.4$ mm

27. Ans (1)

See figure, potential difference across R_L



$I_C R_L = 8V - V_{CE}$

$= 8V - 4V = 4V$

Now $I_C R_L = 4V$

$$R_L = \frac{4}{4 \times 10^{-3}} = 10^3\ \Omega = 1k\Omega$$

Further, for base - emitter equation,

$V_{CC} = I_B R_B + V_{BE}$

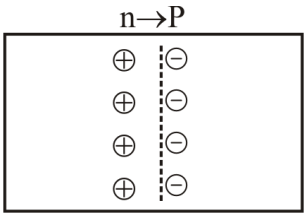
or $I_B R_B$ = potential difference across R_B

$= V_{CC} - V_{BE} = 8 - 0.6 = 7.4$ V

$$\text{Again } I_B = \frac{I_C}{\beta} = \frac{4 \times 10^{-3}}{100} = 4 \times 10^{-5}\ A$$

$$R_B = \frac{7.4}{4 \times 10^{-5}} = 1.85 \times 10^5 \Omega = 185k\Omega$$

28. Ans (3)

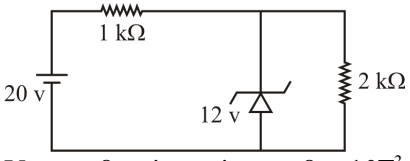


29. Ans (2)

$$I_{max} = \frac{P_{max}}{V_D} = \frac{100 \times 10^{-3}}{0.5} = 200 \times 10^{-3} A$$

$$R = \frac{V - V_D}{I_{max}} = \frac{1.5 - 0.5}{200 \times 10^{-3}} = 5\Omega$$

30. Ans (2)



$V_{1k\Omega} = 8$ v, $i_{batt} = i_{1k\Omega} = 8 \times 10^{-3}$ amp

$$i_{2k\Omega} = \frac{12}{2k\Omega} = 6 \times 10^{-3}\ \text{amp}$$

$i_z = i_{1k\Omega} - i_{2k\Omega}$

$i_z = 2 \times 10^{-3}$ amp

31. Ans (1)

Lower NOT gate inverts input to zero. NOT gate from NAND gate inverts this output to 1 and upper NAND gate converts this input 1 and input 0 to 1. Thus A=1 and B=1 become inputs of NAND g ate giving final output as zero.

32. Ans (2)

One NAND gate is used as NOT gate followed by NAND gate gives AND gate.

Two NAND gate ⇒ AND gate

33. Ans (3)

Due to high doping, electric field in the depletion layer increases.

34. Ans (1)

$$\text{We know that } \beta = \frac{\alpha}{1-\alpha} = \frac{0.96}{1-0.96} = 24$$

The collector curent I_c is given by

$$I_c = \frac{V_c}{R} = \frac{0.5V}{800\,\Omega} = 0.625 \times 10^{-3}\ A$$

$$\text{Further } \quad I_B = \frac{I_c}{\beta} = \frac{0.625 \times 10^{-3}}{24}$$

$$= 26 \times 10^{-6}\ A = 26\ \mu A$$

35. Ans (4)

(1) $\bar{A} \cdot \bar{B} = \overline{A + B} \Rightarrow \overline{\bar{A} \cdot \bar{B}} = A + B$

(2) $\bar{A} + \bar{B} = \overline{A \cdot B} \Rightarrow \overline{\bar{A} + \bar{B}} = A \cdot B$

(3) $\overline{\bar{A} \cdot \bar{B}} = A \cdot B$

(4) $\bar{I} + \bar{I} = \bar{I}$

36. Ans (3)

$$e(3v_0) = \frac{hc}{\lambda} - \frac{hc}{\lambda_0}$$

$$e(v_0) = \frac{hc}{2\lambda} - \frac{hc}{\lambda_0}$$

$$\frac{3hc}{2\lambda} - \frac{3hc}{\lambda_0} = \frac{hc}{\lambda} - \frac{hc}{\lambda_0} \Rightarrow \frac{2hc}{\lambda_0} = \frac{hc}{2\lambda}$$

$$\Rightarrow \lambda_0 = 4\lambda$$

37. Ans (1)

$$\lambda_p = \frac{hc}{E}; \lambda_e = \frac{h}{p} = \frac{h}{\sqrt{2Em}}$$

$$\frac{\lambda_e}{\lambda_p} = \frac{h}{\sqrt{2Em}} \times \frac{E}{hc} = \frac{1}{C}\left(\frac{E}{2m}\right)^{1/2}$$

38. Ans (3)

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

For ground state, n = 1

$$\therefore \quad E_1^z = -13.6 \times Z^2 \text{ eV}$$

Here, $E_1^z = -122.4$ eV

$$\therefore \quad -122.4 = -13.6 \times Z^2$$

or $Z = 3.$

39. Ans (2)

Power = 10×10^3 W = 10^4 J/s

Amount of U^{235} to operate 10 kW reactor is

$$= \frac{10^4 \times 235}{6.02 \times 10^{23} \times 200 \times 10^6 \times 1.6 \times 10^{-19}}$$

$= 1.22 \times 10^{-7}$ g/s

40. Ans (2)

$$R = \frac{dN}{dt} \propto N \Rightarrow \frac{R_2}{R_1} = \frac{N_2}{N_1}, n = \frac{t}{t_{1/2}}$$

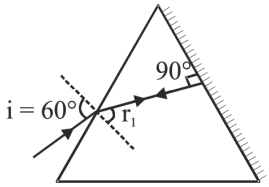
But

$$\frac{N_2}{N_1} = \left(\frac{1}{2}\right)^n \Rightarrow \frac{25}{200} = \frac{1}{8} = \left(\frac{1}{2}\right)^3 \Rightarrow \frac{t}{t_{1/2}} = 3$$

41. Ans (2)

$$\Delta h = h_1\left(1 - \frac{1}{\mu_1}\right) + h_2\left(1 - \frac{1}{\mu_2}\right)$$

42. Ans (2)



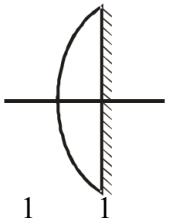
$r_1 = 30°$

$\sin 60° = \mu \sin 30°$

$\mu = \sqrt{3}$

43. Ans (3)

$$\frac{1}{f_2} = (\mu - 1)\left(\frac{1}{R} - \frac{1}{\infty}\right)$$



$$\frac{1}{f_m} = \frac{1}{\infty}$$

$$\frac{1}{f_{eq}} = \frac{-2}{f_2} + \frac{1}{f_m}$$

$$-\frac{1}{10} = -2\frac{(\mu - 1)}{R}$$

$\Rightarrow R = 10$ cm

44. Ans (1)

$L = v_0 + f_e$

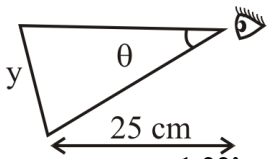
$v_0 = L - f_e = 75 - 5 = 70$ cm

$$\frac{1}{v_0} - \frac{1}{u_0} = \frac{1}{f_0}$$

$$\frac{1}{u_0} = \frac{1}{v_0} - \frac{1}{f_0} = \frac{1}{70} = \frac{1}{50} = -\frac{20}{3500}$$

$u_0 = -175$ cm

45. Ans (4)



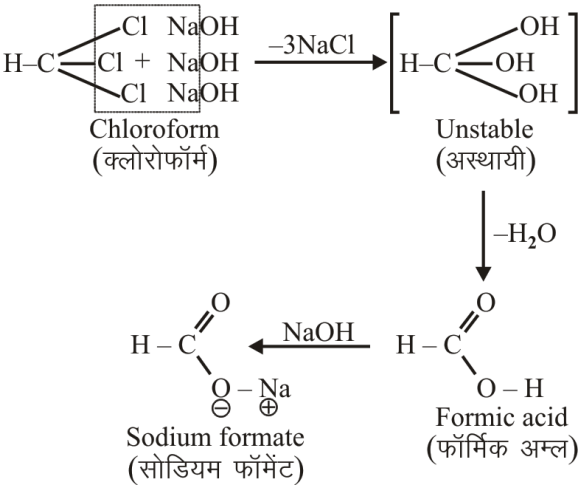
$$\tan\theta = \frac{y}{25} = \frac{1.22\lambda}{D}$$

$$y = \frac{25 \times 1.22 \times 5 \times 10^{-7} \times 10^{-2}}{0.5 \times 10^{-2}}, D = 2r$$

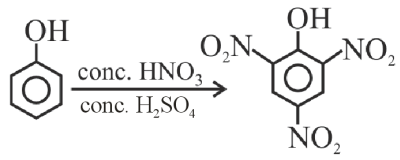
$y = 30.5 \times 10^{-6}$ m

$y = 30.5$ μm

50. Ans (2)



52. Ans (4)



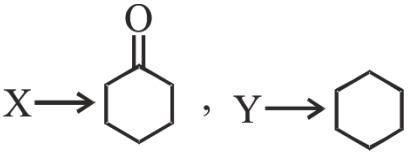
53. Ans (4)

Fact

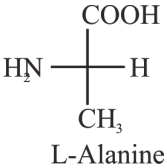
58. Ans (3)

Phenol is less acidic than H_2CO_3 ∴ do not liberate CO_2 gas on reaction with $NaHCO_3$

59. Ans (3)



64. Ans (3)



L-Alanine

Can be obtained by making two conversions at chiral carbon in option (3)

68. Ans (3)

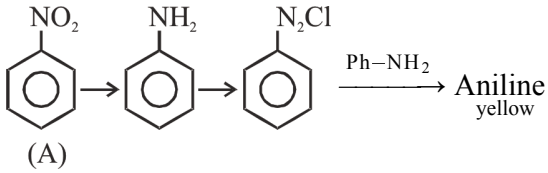
$R–X + NH_3 \rightarrow R–NH_2$

$RCH = NOH \xrightarrow[Na/C_2HO_4]{[4H]} RCH_2NH_2$

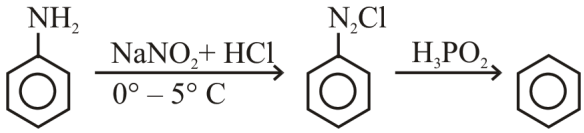
$R–C \equiv N + H_2O \xrightarrow{H^{\oplus}} R–\overset{O}{\overset{\|}{C}}–OH$

$R–\overset{O}{\overset{\|}{C}}–NH_2 + [4H] \xrightarrow{LiAlH_4} R–CH_2–NH_2$

70. Ans (4)



71. Ans (1)



75. Ans (4)

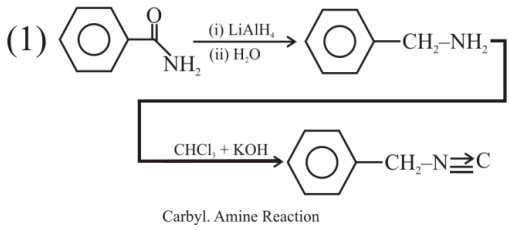
All are copolymer.

77. Ans (4)

Nylon-2-Nylon-6 and PHBV are biodegradable polymer.

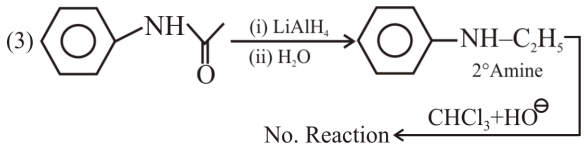
82. Ans (1)

(1)



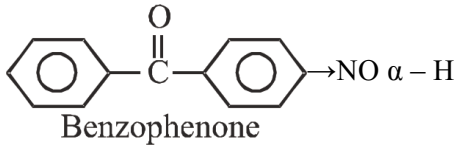
(2) No reaction

(3)



(4) No reaction

84. Ans (4)



∴ No. Aldol Condensation

91. Ans (3)

NCERT XII Pg. # 168 (E), 182 (H)

92. Ans (1)

NCERT(XII) Page# 170/184(H) para 9.1.4

104. Ans (4)

NCERT (XII) Pg. # 259

105. Ans (4)

NCERT (XII) Pg. # 280

107. Ans (4)
NCERT (XII) Pg. # 261, 267, 284,

108. Ans (4)
NCERT (XII) Pg. # 264

109. Ans (4)
NCERT (XII) Pg. # 264, 265

110. Ans (3)
NCERT (XII) Pg. # 260

117. Ans (3)
(d) is incorrect

120. Ans (2)
NCERT Pg. # 250, 251

121. Ans (4)
NCERT (XII) Pg. # 232

124. Ans (2)
NCERT (XIIth) Pg. # 250, 251

131. Ans (2)
Vulture

136. Ans (1)
NCERT (XII) Pg. # 271

137. Ans (4)
NCERT (XII) Pg. # 260