CLASSROOM CONTACT PROGRAMME
(Academic Session : 2024 - 2025)

ENTHUSIAST COURSE
PHASE : MEA,B,C,D,F,G,H,L,M,N,O,P,Q,R,S,U & V
TARGET : PRE MEDICAL 2025

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

TEST DATE : 20-01-2025

ANSWER KEY

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	2	1	1	1	4	4	1	2	2	4	3	4	1	1	1	1	4	3	2	3	4	3	4	3	1	4	2	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.	3	3	3	4	1	1	1	2	4	2	3	1	4	2	4	4	2	1	2	3	4	1	1	1	1	2	4	4	1	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	2	1	1	2	3	1	4	4	3	1	3	2	4	4	4	2	4	1	2	3	3	4	3	1	2	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	1	3	4	2	3	1	2	3	2	2	1	4	1	1	1	2	3	3	4	3	1	2	2	2	3	2	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.	2	2	1	3	4	4	4	2	2	3	2	4	2	3	1	3	1	2	4	2	1	4	2	2	4	2	2	4	3	2
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	4	3	2	3	2	2	1	2	3	1	2	2	4	4	2	2	3	3	3	3	4	4	3	1	3	3	3	4	2
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	3	3	2	3	1	3	4	1	2	1	2	2	2	2	2	3	4	4	2	3										

HINT – SHEET

SUBJECT : BOTANY

SECTION-A

1. **Ans (1)**
NCERT Pg. # 7

2. **Ans (2)**
NCERT, Pg. # 13

3. **Ans (1)**
NCERT Pg. # 65, 67, 69

4. **Ans (1)**
NCERT Pg. # 65, 67

5. **Ans (1)**
NCERT Pg. # 61

6. **Ans (4)**
NCERT Pg. # 88

7. **Ans (4)**
NCERT, Pg. # 81, 82

8. **Ans (1)**
NCERT Pg. No. 96

9. **Ans (2)**
NCERT Pg. # 103

10. **Ans (2)**
NCERT XII, Pg. # 197, 200

11. **Ans (4)**
NCERT XII Pg. # 205

12. **Ans (3)**
NCERT Pg. # 191

13. **Ans (4)**
NCERT-XII, Pg. # 206

14. **Ans (1)**
NCERT Pg.# 207

15. **Ans (1)**
NCERT Pg. # 219

16. **Ans (1)**
NCERT Pg. # 222, 223

17. **Ans (1)**
NCERT-XI, Pg. # 8

18. **Ans (4)**
NCERT Page No. 7

19. **Ans (3)**
NCERT-XI, Pg. # 4

20. **Ans (2)**
NCERT, Pg. # 4

21. **Ans (3)**
NCERT-XI, Pg. # 4

22. **Ans (4)**
NCERT XI Pg.- 6, 7

23. **Ans (3)**
NCERT-XI, Pg. # 141

24. **Ans (4)**
NCERT, Pg. # 141

25. **Ans (3)**
NCERT XI, Pg. # 136

26. **Ans (1)**
NCERT-XI, Pg. # 150

27. **Ans (4)**
NCERT XI, Pg. # 160-161

28. **Ans (2)**
NCERT-XI, Pg. # 160

29. **Ans (2)**
NCERT Pg. # 156

30. **Ans (2)**
NCERT Pg. # 155

31. **Ans (3)**
NCERT Pg. # 68

32. **Ans (3)**
NCERT Pg. # 64

33. **Ans (3)**
NCERT XI Pg. # 73

34. **Ans (4)**
NCERT Pg. # 72

35. **Ans (1)**
NCERT Pg. # 76

SECTION-B

36. **Ans (1)**
NCERT, Pg. # 10,11

37. **Ans (1)**
NCERT XII Pg. No. # 18, 19

38. **Ans (2)**
NCERT Pg. # 62

39. **Ans (4)**
NCERT, Pg # 69

40. **Ans (2)**
NCERT Pg. # 105

41. **Ans (3)**
NCERT, Pg. # 205

42. **Ans (1)**
NCERT-XII, Pg. # 198

43. **Ans (4)**
NCERT-XI, Pg. # 8

44. **Ans (2)**
NCERT, Pg. # 4

45. **Ans (4)**
NCERT-XI, Pg. # 150

46. **Ans (4)**
NCERT-XI, Pg. # 176

47. **Ans (2)**
NCERT Pg. No. # 66

48. **Ans (1)**
NCERT-XI, Pg. 65

49. **Ans (2)**
NCERT Pg. # 72

50. **Ans (3)**
NCERT Pg. # 75

SUBJECT : ZOOLOGY

SECTION-A

51. **Ans (4)**
NCERT-XI, Pg. # 168

53. **Ans (1)**
NCERT-XI, Pg. # 122

59. **Ans (1)**
NCERT Pg # 210, 214

63. **Ans (1)**
NCERT-Page No.40, 41, 45, 49

65. **Ans (2)**
New XI, NCERT, Pg. # 83

66. **Ans (3)**
Module

67. **Ans (1)**
NCERT-XII Page No. 101

68. **Ans (4)**
NCERT Pg. # 288

74. **Ans (4)**
NCERT (E) Pg. # 331

75. **Ans (4)**
NCERT Page # 334, 335, 336

80. **Ans (2)**
NCERT Pg # 43
Assertion (A) describes only list of mole accessory ducts and reason (R) describes only structural arrangement of epididymis and vasa-deferens but it is not explain why they are called male accessory ducts.
कथन (A) में केवल नर जनन सहायक नलिकाओं की सूचि दि गई है। तथा कारण (R) केवल एपिडीडाइमिस एवं वसा डेफरेंस के संरचनात्मक व्यवस्था को वर्णित करता है लेकिन इनको नर जनन सहायक नलिकायें कहा जाये इसकी व्याख्या नहीं करता है।

84. **Ans (3)**
NCERT Pg. # 152

SECTION-B

86. **Ans (2)**
NCERT-XI, Pg # 41,42

92. **Ans (1)**
Clitoris is homologous to penis.

94. **Ans (4)**
NCERT Pg. No. 138 to 140

95. **Ans (2)**
NCERT Pg. # 332

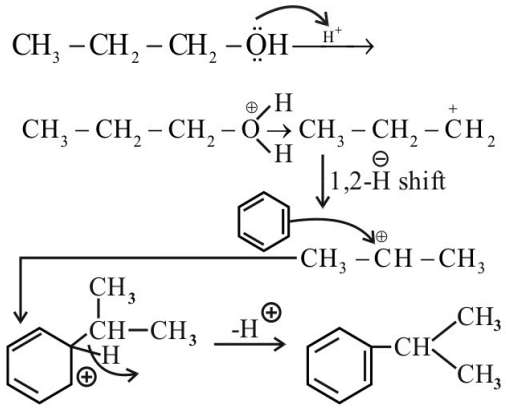
98. **Ans (2)**
NCERT-XI, Pg. # 124, 126, 127

SUBJECT : CHEMISTRY

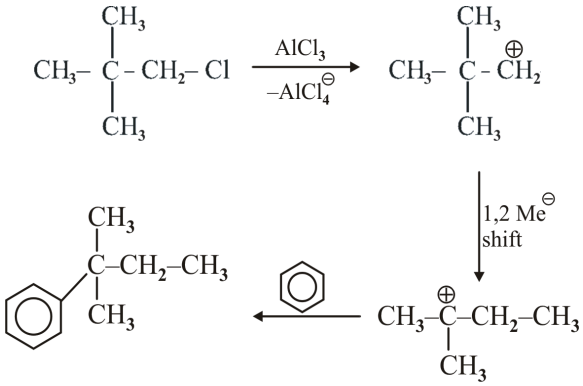
SECTION-A

103. **Ans (4)**
Due to maximum z_{eff}.

116. **Ans (3)**

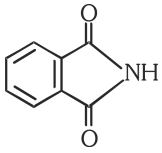


117. **Ans (2)**



118. **Ans (2)**
NCERT-XII, Part-II ; Page No: 166, Article No: 6.4.3, Edition 2023 - 24.

120. **Ans (2)**



is the major product

122. **Ans (2)**

$$\underset{\text{Benzyl amine}}{Ph–CH_2–NH_2} + \underset{\text{Chloroform}}{CHCl_3} + \underset{\text{(alc.)}}{KOH} \xrightarrow{\Delta} Ph–CH_2–NC$$

123. **Ans (1)**
Ncert, class 12th, part-2, Article No: 10.1.2.1 Pg No: 283, Edition : 2023 - 24.

125. Ans (4)

$$AB_2 \rightleftharpoons AB + B$$

t = 0 400 0 0

t_{eq} 400−x x x

at eq^m $P_T = 600$

$400 - x + x + x = 600$

$x = 200$

$$K_P = \frac{(x)(x)}{(400 - x)}$$

127. Ans (4)

	C	H	Cl
mass %	24.27	4.07	71.65
mole%	$\frac{24.27}{12}$	: $\frac{4.07}{1}$	: $\frac{71.65}{35.5}$
	2.02	4.07	2.01
Rounding	2	: 4	: 2
off	1	: 2	: 1

Empirical formula CH_2Cl

128. Ans (2)

Temp $T_1 = 300$ K rate constant : K

$T_2 = 310$ K : 2 K

$$\log\left(\frac{2K}{K}\right) = \frac{E_a}{2.303R}\left[\frac{310 - 300}{300 \times 310}\right]$$

$R = 8.314\ JK^{-1}\ mol^{-1}$

129. Ans (2)

$$n_{urea} = \frac{0.6}{60},\ n_{glu} = \frac{3.42}{342} \quad \begin{cases} i_{urea} = 1 \\ i_{glu} = 1 \end{cases}$$

$= 0.01$ $= 0.01$

$$\pi = CRT = \left(\frac{0.01 + 0.01}{0.1}\right) \times 0.0821 \times 300$$

130. Ans (3)

HCl + NaOH → NaCl + H_2O

0.2g. eq 0.2 g. eq.

complete neutralisation occurs

pH = 7

131. Ans (2)

red (vf = 0)

$\overset{0}{Cl_2} \rightarrow \overset{-1}{NaCl} + \overset{+1}{NaClO} + H_2O$

Oxd (vf = 2)

above reaction is a disproportionation reaction

$$vf = \frac{vf_1 \times vf_2}{vf_1 + vf_2} = \frac{2 \times 2}{2 + 2} \quad ...(1)$$

$$\text{Equation constant} = \frac{MM}{vf} = \frac{71}{1} = 71$$

SECTION-B

137. Ans (1)

as per V.S.E.P.R.

138. Ans (2)

$$N_2 \xrightarrow{\text{electron}} N_2^-$$

$(\sigma 2P_z)^2 < (\pi 2P_x)^0 \rightarrow (\sigma 2P_z)^2 < (\pi 2P_x)^1$

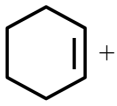
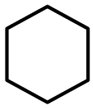
Diamagnetic Paramagnetic

$$O_2 \xrightarrow{\text{electron}} O_2^-$$

$(\sigma 2P_x^*)^1 = (\pi 2P_y^*)^1 \rightarrow (\pi 2P_x^*)^2 = (\pi 2P_y^*)^1$

Diamagnetic Paramagnetic

146. Ans (2)

 + H_2 →  ; $\Delta H_{hydrogenation}$

$\Delta H_{hydrogenation} = \Delta H_C$  + $\Delta H_C H_2 - \Delta H_C$

$= [(-35) + (-50)] - [-25]$

147. Ans (2)

$T = 450$ K $\Delta H_r = 50\ kJ\ mol^{-1}$

$\Delta G_r = \Delta H_r - T\Delta S_r$.

For spontaneous reaction $\Delta G_r < 0$

148. Ans (4)

gram equation of $H_2SO_4 = M \times V \times vf$

$= 0.5 \times 0.5 \times 2$

$= 0.5$

gram equation of NaOH $= 0.2 \times 0.5 \times 1$

$= 0.1$ (L.R)

Heat evolved $= 57.1 \times 0.1$

$= 5.71$ kJ

149. Ans (3)

Radial nodes $= n - \ell - 1 = 3 - 2 - 1 = 0$

Total nodes $= n - 1 = 3 - 1 = 2$

150. Ans (2)

$\Delta T_f = iK + M$ {i = 1}

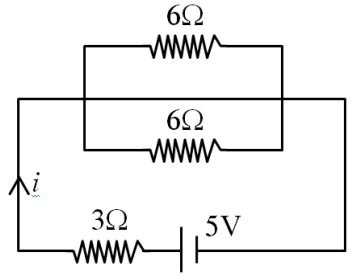
$$0.4 = \frac{1 \times 5.12 \times 1 \times 1000}{MM \qquad 50}$$

MM = 256

SUBJECT : PHYSICS

SECTION-A

151. Ans (2)



$i = \frac{5}{3+0} = \frac{5}{3}A$.

152. Ans (4)

$R = \rho\frac{\ell}{A}$ & $V = A\ell \Rightarrow$ (For stretching)

$R = \rho\frac{\ell^2}{V} \Rightarrow R \propto \ell^2$

$\Rightarrow \frac{R_2}{R_1} = \left(\frac{\ell_2}{\ell_1}\right)^2 = \left(\frac{5\ell_1}{\ell_1}\right)^2 = 25$

$\Rightarrow R_2 = 25R_1$

$\Rightarrow R_2 = 25 \times 10\Omega$

$\Rightarrow R_2 = 250\Omega$.

153. Ans (3)

$V = \frac{kP}{r^2}$

$V \propto \frac{1}{r^2}$

154. Ans (2)

The electric field due to conducting infinite sheet placed in a medium of permittivity ε is, $E = \frac{\sigma}{\varepsilon}$

155. Ans (3)

$V = -x^2 - xy + 2$

$E_x = -\frac{dV}{dx} = 2x + y$

$E_y = -\frac{dV}{dy} = x$

$\vec{E} - = (2x + y)\hat{i} + x\hat{j}$ N/C

156. Ans (2)

$Y_{B_3} = \frac{3\lambda D}{d}$

$\lambda = \frac{Y_{B_3} \times d}{3D} = \frac{10 \times 10^{-3} \times 0.3 \times 10^{-3}}{3 \times 200 \times 10^{-2}}$

$\lambda = 5 \times 10^{-7}$ m = 5000 Å

157. Ans (2)

Satellite is orbiting the earth with speed v_o

$x = \frac{1}{2}mv_o^2$ ---------- (I)

Energy needed to escape from gravitational pull of earth

$E = \frac{1}{2}mv_e^2$ ----------(II)

Since we know that

$v_e = \sqrt{2}v_o$

$E = \frac{1}{2}m\left(\sqrt{2}v_o\right)^2$

$= 2 \times \frac{1}{2}mv_0^2 = 2x$

158. Ans (1)

$mg' = mg\left(1 - \frac{d}{R}\right)$

Here, $d = \frac{R}{4}$

$mg' = 500\left(1 - \frac{1}{4}\right)$

mg' = 375 N

159. Ans (2)

$V = \frac{Q^2}{2C}$

$\Rightarrow U = \frac{Q^2 d}{2\varepsilon_0\varepsilon_r A}$

$\Rightarrow U\alpha\frac{1}{\varepsilon_r}$ ($\because$ Q = constant)

160. Ans (3)

$W = \vec{F} \cdot \vec{S}$

$\Rightarrow (5\hat{i} + 7\hat{j} + 2\hat{k}).(\vec{r}_2 - \vec{r}_1)$

$= (5\hat{i} + 7\hat{j} + 2\hat{k}).(-8\hat{j} + 5\hat{k})$

$= -56 + 10 = -46$ J

161. Ans (1)

$[h] = ML^2T^{-1}$

$[L] = ML^2T^{-1}$

$[P] = MLT^{-1}$

$[\tau] = ML^2T^{-2}$

[Here, h is Planck's constant, L is angular momentum, P is linear momentum and τ is moment of force (Torque)]

162. Ans (2)

Momentum = Mass × Velocity

$p = mv$ ....(1)

when mass and velocity both becomes 4 times.

$p' = (4m)(4v)$ ....(2)

$\therefore \frac{p}{p'} = \frac{mv}{(4m)(4v)}$

$\therefore p' = 16p$

163. Ans (2)

CV = MV − ZE

MV = 3.5 mm + 32 × LC

$LC = \frac{0.5\text{ mm}}{50} = 0.01\text{ mm}$

MV = 3.5 + 32 × 0.01 = 3.82 mm

CV = 3.82 − 0.06 = 3.76 mm

164. Ans (4)

By LMC $\longrightarrow M_{gn}\, V_{rcoil} = (m_{Bullet} \times V_{Bullet})$

$20\, V_{recoil} = \left(\frac{50}{1000} \times 200\right)$

$V_{recoil} = \frac{1}{2}$ m/s

165. Ans (4)

X-rays is an electromagnetic radiation, so X-ray photons carry neither electric charge nor magnetic moment.

166. Ans (2)

$$\frac{\text{Power of } S_2}{\text{Power of } S_1} = \frac{n_2\left(\frac{hc}{\lambda_2}\right)}{n_1\left(\frac{hc}{\lambda_1}\right)} = \frac{n_2\lambda_1}{n_1\lambda_2} = 1$$

167. Ans (2)

Energy, $\frac{hC}{\lambda} = 4.5\text{eV}$

Hence, transition B

168. Ans (3)

According to Rutherford atomic model, most of mass of atom and all its positive charge is concentrated in tiny nucleus & electron revolve around it.

According to Thomson atomic model, atom is spherical cloud of positive charge with electron embedded in it.

Hence,

Statement I is true but statement II is false.

169. Ans (3)

$$\lambda = (3.3\text{Å})\frac{n}{Z} = (3.3\text{Å})\left(\frac{2}{1}\right) = 6.6\text{Å}$$

170. Ans (3)

N = m(g + a), for lift moving up with decreasing speed, a is taken 'negative'.

171. Ans (3)

Acceleration of the blocks :

$a = \frac{m_2 - m_1}{m_2 + m_1}g = \frac{4-2}{4+2}g = \frac{g}{3}$

$F_{net}\,(\text{on } m_1) = m_1 a$

$= 2 \times \frac{g}{3} = \frac{20}{3}\text{N}$

172. Ans (4)

Based on the equation of continuity, a smaller cross-sectional area leads to a higher velocity to keep the flow rate constant. Hence the velocity is highest in the narrow part of the pipe.

173. Ans (4)

$A_1V_1 = A_2V_2$

$(0.1)2 = (0.05)V_2$

$V_2 = 4$ m/s

174. Ans (3)

$v_{max} \leqslant \sqrt{\mu rg}$

$v \leqslant \sqrt{0.4 \times 400 \times 10}$

$v \leqslant \sqrt{1600} = 40\text{m/s}$

175. Ans (1)

$$\nu = \frac{C}{\sqrt{\mu_r\varepsilon_r}}$$

$$\varepsilon_r = \frac{C^2}{\nu^2\mu_r} = \frac{C^2}{\frac{C^2}{4} \times 2}$$

$\varepsilon_r = 2$

$\varepsilon = \varepsilon_0\varepsilon_r = 2\varepsilon_0$

176. Ans (3)

$$\nu = \frac{\omega}{k} = \frac{2 \times 10^7}{2} = 10^7\text{ m/s}$$

177. Ans (3)

$\vec{B} = B_0\left(2\hat{i} + 3\hat{j} + 4\hat{k}\right)$ T.

Area of square $= L^2\hat{k}\ m^2$

flux $\phi = \vec{B}.\vec{A} = B_0\left(2\hat{i} + 3\hat{j} + 4\hat{k}\right).L^2\hat{k}$

$= 4B_0L^2$ Wb

178. Ans (3)

$r_1 = r_2$

$$\Rightarrow \frac{m_1v_1}{q_1, B} = \frac{m_2v_2}{q_2, B}$$

$$\Rightarrow \frac{V_1}{V_2} = \frac{q_1}{q_2} \times \frac{m_2}{m_1}$$

$$= \frac{e}{2e} \times \frac{4m}{m}$$

$\frac{v_1}{v_2} = 2 \Rightarrow V_2 = \frac{v_1}{2}$

4×10^6 m/s

179. Ans (4)

$$f = \frac{\mu_0 I_1 I_2}{2\pi d} \times \ell = \frac{2 \times 10^{-7} \times 100 \times 1.1}{10^{-1}}$$

$\therefore\ 22 \times 10^{-5}$ N

180. Ans (2)

$$B = \frac{\mu_0 i}{2r} = \frac{\mu_0 (qt)}{2r} = \frac{\mu_0 \times 100e \times 1}{2 \times 0.8}$$
$$= \frac{\mu_0 \times 100 \times 1.6 \times 10^{-19}}{1.6} = \mu_0 \times 10^{-17}$$

181. Ans (3)

$$\text{Emmissivity} = \frac{e}{a} = \frac{\text{Emissive power}}{\text{Absorptive power}} = \frac{6}{10} = 0.6$$

182. Ans (3)

Thermal radiation is electromagnetic radiation and travels with speed of light in vacuum.

183. Ans (2)

$F \propto -x$ (linearly)

so the motion is SHM and hence periodic

At mean position,

$F = -2x + 4 = 0$

$\Rightarrow x = 2$ metre

$\therefore x = 2$ is mean position.

184. Ans (3)

$f_B - f = 2(f_A - f)$

$262 - f = 2\,(256 - f)$

$f = 250$ Hz

And $f_B - f = 2(f - f_A)$

$$\Rightarrow f = \frac{2f_A + f_B}{3} = \frac{2 \times 256 + 262}{3}$$

$f = 258$ Hz

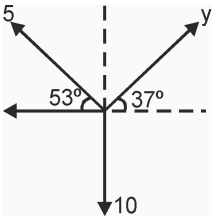
185. Ans (1)

$\Sigma F_x = 0$

$\Rightarrow x + 5\cos 53^\circ - y \sin 53^\circ = 0$

$$\Rightarrow x + 3 - \frac{4y}{5} = 0$$

$\Rightarrow 5x + 15 - 4y = 0$



$\Sigma F_y = 0$

$10 - 5\sin 53^\circ - y\cos 53^\circ = 0$

$$\Rightarrow 10 - 4 - \frac{3y}{5} = 0 \Rightarrow 6 = \frac{3y}{5} \Rightarrow y = 10$$

$\therefore x = 5$.

SECTION-B

186. Ans (3)

$I \propto MR^2$

$M = \pi R^2 t \times \rho$

$$\frac{I_1}{I_2} = \frac{R_1^2 \times \rho_1 \times R_1^2}{R_2^2 \times \rho_2 \times R_2^2}$$
$$\frac{I_1}{I_2} = \frac{R^2 \times 9\sigma \times R^2}{9R^2 \times \sigma \times 9R^2}$$
$$\frac{I_1}{I_2} = \frac{1}{9}$$

187. Ans (4)

Initially,

$$\frac{6}{4} = \frac{\ell_1}{100 - \ell_1} \Rightarrow 600 - 6\ell_1 = 4\ell_1 \Rightarrow \ell_1 = 60\text{cm}$$

When $X\Omega$ is shunted to 6Ω resistance,

$\ell_2 = \ell_1 - 10 = 50$cm

If $R = \frac{6X}{6+X}$, then $\frac{R}{4} = \frac{50}{100-50} \Rightarrow R = 4\Omega$

$$\Rightarrow \frac{6X}{6+X} = 4 \Rightarrow 2X = 24 \Rightarrow X = 12\Omega\,.$$

188. Ans (1)

Path , $SS_2O > SS_1O$

$\Delta_x = SS_2 - SS_1$

$\Delta_x = \sqrt{2}\,d - d$

$\Delta_x = \left(\sqrt{2} - 1\right) d$

So, without the slab, central maxima will be below O. Some Δx should be added by mica sheet of $\mu = 1.5$ in path of SS_1O, so that central maxima comes at centre O.

So, both path difference should be equal.

The extra path difference in lower slit has to be componsated by extra path difference introduced by mica sheet.

$\therefore (\mu - 1)\, t = \left(\sqrt{2} - 1\right) d$

$$\therefore t = \frac{\left(\sqrt{2} - 1\right) d}{(\mu - 1)} = \frac{\left(\sqrt{2} - 1\right) d}{(1.5 - 1)}$$

$\therefore t = 2\left(\sqrt{2} - 1\right) d$

189. Ans (2)

$V_{mean} = \frac{1+2+3+4+5}{5} = \frac{15}{5} = 3$ volt

(S.F. = 1)

$I_{mean} = \frac{(1.43+2.57+5.68+7.32+8.00)}{5}$mA

$I_{mean} = \frac{25mA}{5} = (S.F. = 1)\ 5mA = 5 \times 10^{-3}$ A

$R = \frac{V_{mean}}{I_{mean}} = \frac{3}{5 \times 10^{-3}}\Omega = \frac{3}{5}k\Omega$

$= 0.6\ k\Omega$ (S.F = 1)

$R = 6 \times 10^{-1}\ k\Omega$

$\because\ R = \alpha \times 10^{\beta}\ k\Omega$

$\therefore\ \alpha = 6\ \&\ \beta = -1$

$\therefore$ The value of $\alpha + \beta$ is

$\alpha + \beta = 6 + (-1)$

$\therefore\ \alpha + \beta = 5$

190. Ans (1)

mass removed, $m = \frac{Mb^2}{R^2}$

$x_{com} = \frac{M(0) - \frac{Mb^2}{R^2}(R-b)}{M - \frac{Mb^2}{R^2}} = \frac{-b^2}{R+b}$

193. Ans (2)

Three atoms of deuterium results 21.6 MeV energy. Each atom of $_1H^2$ contains two nucleons. Three atoms contains 6 nucleons.

Thus, the energy released per nucleon

$= \frac{21.6}{6} = 3.6$ MeV

194. Ans (2)

$V_A = V_B$

$\frac{d}{dt}(X_A) = \frac{d}{dt}(X_B)$

$a + 2t = b - 2t$

$4t = b - a$

$t = \frac{b-a}{4}$

195. Ans (2)

$\phi = BA\cos\theta$

$\phi = B_0t^2 \cdot \pi R^2 \cos 0^o$

$\phi = B_0\pi R^2 t^2$

$\frac{d\phi}{dt} = 2B_0\pi R^2 t$

$|\varepsilon| = \left|\frac{d\phi}{dt}\right|$

$\varepsilon = 2B_0\pi R^2 t$

Then

$i = \frac{\varepsilon}{r} = \frac{2B_0\pi R^2}{r}t$

196. Ans (3)

$\omega' = \omega$

$\frac{1}{\sqrt{L'C'}} = \frac{1}{\sqrt{LC}}$

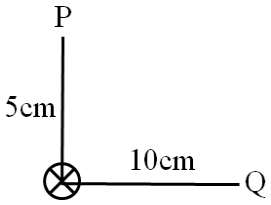
$L'C' = LC$

$L' \times 3C = LC$

$L' = \frac{L}{3}$

So inductance must be decreased by $\frac{2L}{3}$

197. Ans (4)



$B = \frac{\mu_0 i}{2r\pi} \Rightarrow B \propto \frac{1}{r}$

$\frac{B_1}{B_2} = \frac{r_2}{r_1}$

$\frac{20}{B_2} = \frac{10}{5}$

$B = 10\ \mu T$

(South)

198. Ans (4)

Heat loss = Heat gain

$m \times 540 + m \times 1(100 - 40)$

$= 180 \times 1 \times (40 - 25) + 20 \times 1\ (40 - 25)$

$600\ m = 15 \times (180 + 20)$

$m = 5$

199. Ans (2)

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

$= \frac{\sin\frac{60^\circ+30^\circ}{2}}{\sin 60^\circ/2} = \frac{\sin 45^\circ}{\sin 30^\circ}$

$= \frac{\frac{1}{\sqrt{2}}}{1/2} = \frac{1}{\sqrt{2}} \times \frac{2}{1} = \sqrt{2}$

200. Ans (3)

$M = m_0 \times m_e = m_0\left(1 + \frac{D}{f_e}\right)$

$m_0 = \frac{M}{\left(1 + \frac{D}{f_e}\right)} = \frac{30}{\left(1 + \frac{25}{5}\right)}$

$m_0 = 5$