

Enthusiast, Leader & Achiever Course

PHASE : ALL PHASE

TARGET : PER-MEDICAL 2020

Test Type : MAJOR

Test Pattern : NEET (UG)

TEST DATE : 10-09-2020

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

HINT - SHEET

1. Ans (2)

Here one end is at $2f$ distance and other end is

at $2f - \frac{f}{3} = \frac{5f}{3}$ distance from mirror.

so $u = -\frac{5f}{3}$, use mirror formula

$$\frac{1}{v} + \frac{1}{-5f/3} = \frac{1}{-f}$$

$$\frac{1}{v} = -\frac{1}{f} + \frac{3}{5f}$$

$$v = -\frac{5f}{2}$$

$$\text{Length of image} = \left| 2f - \frac{5f}{2} \right| = \frac{f}{2}$$

2. Ans (3)

$$v_{\text{rel}} = 2v \cos \theta$$

3. Ans (1)

$$u = -\infty, v = -200 \text{ cm} = -2 \text{ m}$$

$$P = \frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{-1}{2} - 0 = D$$

4. Ans (1)

$$\lambda = \frac{h}{p} = \frac{h}{\sqrt{2mqv}}$$

$$\lambda \propto \frac{1}{\sqrt{v}} \text{ and slope is } \frac{h}{\sqrt{2mq}}$$

slope of B is greater than slope of A

$$\text{so } m_A > m_B$$

5. Ans (4)

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

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

$$\text{or } \frac{T_1}{T_2} = \frac{1}{8}$$

6. **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

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

7. **Ans (2)**

$$\text{Use } \frac{Q}{t} = KA \frac{\Delta T}{\ell}$$

8. **Ans (1)**

$$Q = eA \sigma (T^4 - T_0^4) = ms \frac{\Delta \theta}{\Delta t}$$

Q is same for solid & hollow sphere but mass of solid sphere is greater so rate of cooling

$\left(\frac{\Delta \theta}{\Delta t}\right)$ is greater for hollow sphere.

9. **Ans (3)**

$$Q = \left(\frac{f}{2} + 1\right) n R \Delta T$$

Here $n = 1$ for all three

$$F_{\text{poly}} > f_{\text{dia}} > f_{\text{mono}}$$

a \rightarrow polyatomic

b \rightarrow diatomic

c \rightarrow mono atomic

10. **Ans (3)**

$$\frac{50}{100} = 1 - \frac{500}{T_{\text{source}}}$$

$$\Rightarrow T_{\text{source}} = 1000 \text{ K}$$

$$\Rightarrow \frac{60}{100} = 1 - \frac{T_{\text{sink}}}{1000}$$

$$\Rightarrow T_{\text{sink}} = 400 \text{ K}$$

11. **Ans (2)**

$$F = \frac{\left(\frac{4}{3}\pi R^3 \rho\right) \left(\frac{4}{3}\pi R^3 \rho\right) G}{4R^2}$$

$$\Rightarrow F = \frac{4}{3}\pi^2 \rho^2 R^4 G$$

12. **Ans (1)**

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

$$E = \frac{a^2 dB/dt}{2r} = \frac{(5 \times 10^{-2})^2 \times 4}{2 \times 10 \times 10^{-2}}$$

$$E = \frac{25 \times 10^{-4} \times 4}{2 \times 10^{-1}} = \frac{100}{2} \times 10^{-3}$$

$$= \frac{10^{-1}}{2} = 0.05 \text{ V/m}$$

13. **Ans (4)**

$$\Delta = d \sin \theta - \mu(t-1)$$

values of d , θ , μ & t are not given.

14. **Ans (1)**

$$\sin \theta = \frac{\Delta}{a} = \frac{n\lambda}{a}$$

$$\sin \theta = \frac{4 \times 4 \times 10^{-7}}{0.2 \times 10^{-3}}$$

$$\sin \theta = 8 \times 10^{-3} \quad \boxed{\theta = \sin^{-1}(8 \times 10^{-3})}$$

15. **Ans (4)**

$$10 \times 10^{-3} R = 6 - 2 \text{ volt}$$

$$R = 400 \Omega$$

16. **Ans (4)**

$$\left(\frac{10\lambda D}{d}\right)_{\text{Int.}} = \left(\frac{2\lambda D}{b}\right)_{\text{diff.}}$$

$$\frac{10}{1\text{mm}} = \frac{2}{b}$$

$$b = 0.2 \text{ mm}$$

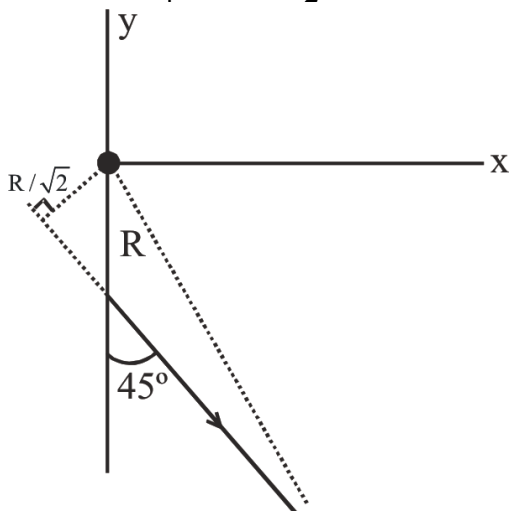
17. **Ans (3)**

When particle enters at angle other than 0° or 90° or 180° , path followed is helix.

18. Ans (3)

$$B = \left(\frac{\mu_0 I}{4\pi d} \right) [\sin \alpha + \sin \beta]$$

Here $\alpha = -\frac{\pi}{4}$ and $\beta = \frac{\pi}{2}$



$$\begin{aligned} &= \frac{\mu_0 I}{4\pi} \times \frac{\sqrt{2}}{R} \left[\sin\left(-\frac{\pi}{4}\right) + \sin 90 \right] \\ &= \frac{\mu_0 I}{4\pi R} \times \sqrt{2} \left[1 - \frac{1}{\sqrt{2}} \right] \\ &= \frac{\mu_0 I}{4\pi R} \times [\sqrt{2} - 1] \text{ Out of plane of paper.} \end{aligned}$$

19. Ans (1)

In given plane horizontal component of magnetic field is zero.

20. Ans (2)

$$\begin{aligned} L &= I\omega \\ &= 0.06 \times 5 \times 2\pi \\ &= 0.6\pi \end{aligned}$$

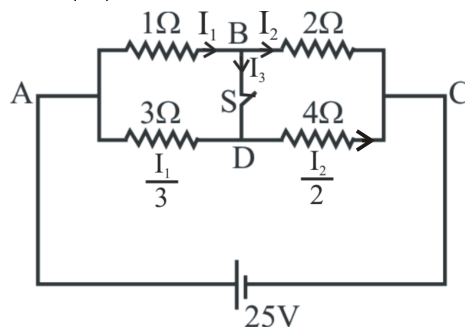
21. Ans (3)

$$v \propto \sqrt{a}$$

$$\frac{v}{v_R} = \sqrt{\frac{a}{a_R}} \quad \& \quad a_R = \frac{g \sin \theta}{1 + \frac{I}{mR^2}} = \frac{g \sin \theta}{2}$$

$$a = g \sin \theta \Rightarrow v_R = \frac{v}{\sqrt{2}}$$

22. Ans (1)



Here $V_{AB} = V_{AD}$

so if current in 1Ω is I_1 then current in 3Ω is

$$\frac{I_1}{3}$$

and $V_{BC} = V_{DC}$

so if current in 2Ω is I_2

then current in 4Ω is $\frac{I_2}{2}$

By KCL $I_1 + \frac{I_1}{3} = I_2 + \frac{I_2}{2}$

i.e. total current through battery

$$\text{so } \frac{4I_1}{3} = \frac{3I_2}{2}$$

or $8I_1 = 9I_2$ (1)

we have to find I_3 , by KCL

$$I_3 = I_1 - I_2 \text{ or } I_3 = \frac{I_2}{2} - \frac{I_1}{3} \text{(2)}$$

Use KVL along loop ABCA through battery

$$25 - I_1 - 2I_2 = 0 \text{(3)}$$

by (1) & (3)

$$25 = I_1 + 2I_2 = I_1 + 2\left(\frac{8}{9}I_1\right)$$

$$\Rightarrow 25 = \frac{25}{9}I_1 \Rightarrow I_1 = 9 \text{ A(4)}$$

by eq (4) & (1), $I_2 = 8 \text{ A}$

by eq (2) $I_3 = 9 - 8 = 1 \text{ A}$

23. Ans (3)

In parallel $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

multiply by V^2

$$\frac{V^2}{R} = \frac{V^2}{R_1} + \frac{V^2}{R_2}$$

$$\Rightarrow P = P_1 + P_2$$

24. Ans (4)

$$[K] = \frac{[V][Y_2]}{[x_2]^4} = \frac{[M^0 L^3 T^{-1}][L]}{[L^4]}$$

$$[K] = [M^0 L^0 T^{-1}]$$

25. Ans (3)

$$a = V \frac{dv}{dx}$$

$$(180 - 16x)^{\frac{1}{2}} \times \frac{1}{2} (180 - 16x)^{-\frac{1}{2}} (-16) \\ = -8 \text{ m/s}^2$$

26. Ans (1)

$$V_1 + V_2 = \frac{200}{10}$$

$$V_1 - V_2 = \frac{200}{20}$$

$$V_1 + V_2 = 20$$

$$V_1 - V_2 = 10$$

$$2V_1 = 30$$

$$V_1 = 15 \text{ m/s}$$

$$V_2 = 5 \text{ m/s}$$

27. Ans (1)

$$V_0 = \sqrt{2gh_0}$$

$$V_n = e^n V_0$$

$$\sqrt{2gh_n} = e^n \sqrt{2gh_0}$$

$$e^n = \sqrt{\frac{h_n}{h_0}}$$

28. Ans (1)

$$U = \left(\frac{1}{2} \epsilon_0 E^2 \right) a^3 \dots (1)$$

$$E = \frac{\sigma}{2\epsilon_0} \text{ put in (1)}$$

$$U = \frac{1}{8} \frac{\sigma^2 a^3}{\epsilon_0}$$

29. Ans (1)

$$v = \left(\frac{qE}{m} \right) \cdot t$$

$$KE = \frac{1}{2} mv^2 = \frac{1}{2} m \frac{q^2 E^2 t^2}{m^2} = \frac{1}{2} \frac{q^2 E^2 t^2}{m}$$

$$KE \propto \frac{q^2}{m}$$

$$\frac{(KE)_1}{(KE)_2} = \frac{q_1^2}{q_2^2} \times \frac{m_2}{m_1} = \left(\frac{2q}{2q} \right)^2 \times \frac{2m}{m} = \frac{2}{1}$$

30. Ans (3)

$$Ar = \frac{75}{100} \times 0.02 = 0.015, \text{ from rarer medium,}$$

$$y = 0.015 \sin 8\pi \left(t + \frac{x}{20} \right)$$

31. Ans (2)

$$\frac{v}{2\ell_1} - f = 5 \dots (1)$$

$$f - \frac{v}{2\ell_2} = 5 \dots (2)$$

$$\text{by (1) + (2), } \frac{v}{2} \left(\frac{1}{95} - \frac{1}{100} \right) \times 100 = 10$$

$$\frac{v}{2} \times \frac{5}{95} = 10 \Rightarrow v = 380 \text{ m/s}$$

$$f = 5 + \frac{v}{2\ell_2} = 5 + \frac{380}{2 \times 100 \times 10^{-2}}$$

$$f = 195 \text{ Hz}$$

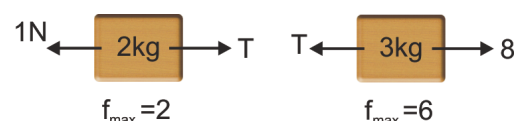
32. Ans (1)

$$F + F + 2F = 60 \text{ kg f}$$

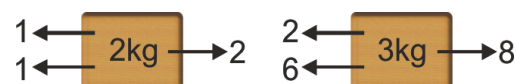
$$F = 15 \text{ kg f}$$

33. Ans (3)

FBD



Net force without friction on system is '7N' in right side so first maximum friction will come on 3 kg block.



So $f_1 = 1 \text{ N}$, $f_2 = 6 \text{ N}$, $T = 2 \text{ N}$

$f_1 = 1 \text{ N}$, $f_2 = 6 \text{ N}$, $T = 2 \text{ N}$

34. Ans (1)

$$K = \frac{1}{B}, B = \frac{-\Delta P v}{\Delta v}$$

$$K = -\frac{\Delta v}{v \Delta P}$$

$$-\Delta V = K v \Delta P$$

$$= \frac{4 \times 10^{-5}}{\text{atmospr}} \times (100 \text{ cc}) \times (100 \text{ atm pr})$$

$$= 0.4 \text{ cc}$$

35. Ans (2)

$$E_{\text{mech}} = K_A + U_{gA} + U_{sA} = 0 + mgx_A + \frac{1}{2} kx_A^2$$

$$= 25 \times 10 \times (-0.100) +$$

$$\frac{1}{2} \times 2.5 \times 10^4 \times (-0.100)^2$$

$$= -25 + 125 = 100 \text{ J}$$

36. Ans (3)

$$T = 2\pi \sqrt{\frac{m}{K}}$$

$$T' = 2\pi \sqrt{\frac{m}{4K}} = \frac{2\pi}{2} \sqrt{\frac{m}{K}} = \frac{T}{2}$$

When spring is cut into four part spring constant of each part is $4K$.

37. Ans (3)

$$\omega_{\min} = \frac{2\pi}{60} \text{ rad/min and}$$

$$\omega_{\text{hr}} = \frac{2\pi}{12 \times 60} \text{ rad/min}$$

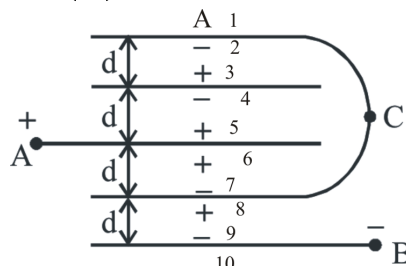
$$\frac{\omega_{\min}}{\omega_{\text{hr}}} = \frac{2\pi}{60} \times \frac{12 \times 60}{2\pi} = 12 : 1$$

38. Ans (3)

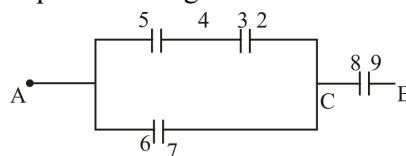
$$\text{Heat dc} = i^2 R = (4)R$$

$$\text{Heat ac} = i_{\text{rms}}^2 R = (\sqrt{2})^2 R = 2R$$

39. Ans (2)



Equivalent diagram



$$C_{AB} = \frac{C \times \left(C + \frac{C}{2}\right)}{C + \left(C + \frac{C}{2}\right)} = \frac{\frac{3C^2}{2}}{5\frac{C}{2}}$$

$$= \frac{3}{5} C = \frac{3\epsilon_0 A}{5d}$$

40. Ans (2)

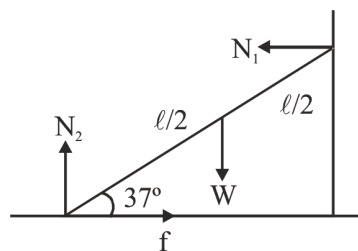
During the growth of current in L-R circuit is given by:

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

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

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

41. Ans (3)



$$N_2 = 10 \text{ g}$$

$$f = N_1$$

$$10g \frac{\ell}{2} \cos 37^\circ = N_1 \ell \sin 37^\circ$$

$$N_1 = \frac{100}{2} \times \frac{4}{5} \times \frac{5}{3} = \frac{200}{3} = 66 \text{ N}$$

$$f = 66 \text{ N}$$

$$N_2 = 100 \text{ N (approximate)}$$

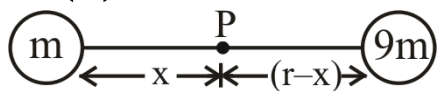
42. **Ans (2)**

Theory

43. **Ans (1)**

Because film tries to cover minimum surface area.

44. **Ans (2)**



$$\frac{GM}{x^2} = \frac{G(9m)}{(r-x)^2}$$

$$r-x = 3x$$

$$4x = r$$

$$x = r/4$$

$$V_p = \frac{-GM}{r/4} + \left(\frac{-G(9m)}{\frac{3r}{4}} \right)$$

$$V_p = \frac{-16GM}{r}$$

45. **Ans (4)**

AB → isochoric process ← CD

$$W_{AB} = 0 \quad ; \quad W_{CD} = 0$$

BC → isobaric ← DA

$$W_{BC} = nR(T_1 - T_2)$$

$$W_{DA} = nR(T_3 - T_4)$$

$$W_{cyclic} = nR(T_1 + T_3 - T_2 - T_4)$$

46. **Ans (1)**

Activation energy increases rate constant decreases. As $K' < K''$, $E'_a > E''_a$

47. **Ans (3)**

$$\frac{\text{Partial pressure}}{\text{no. of moles of gas} \times P_{\text{total}}} =$$

$$2.5 = \frac{5 \times P_T}{2 + 3 + 5 + 10}$$

$$\boxed{10 \text{ atm} = P_T}$$

48. **Ans (1)**

Let there be $\text{Cu}^+ = x$ moles

$\text{Cu}^{+2} = (1.8 - x)$ moles

$$x + 2(1.8 - x) = +2$$

$$x + 3.6 - 2x = 2$$

$$1.6 = x$$

$$\% \text{ of } \text{Cu}^+ = \frac{1.6}{1.8} \times 100 = 88.88\%$$

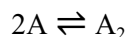
49. **Ans (4)**

Wt. of phenol (W_A) = $15 \times 10^{-3} \text{ kg} = 15 \text{ g}$

Wt. of benzene (W_B) = 1 kg

$$\Delta T_f = i K_f m$$

$$i = \frac{\Delta T_f}{K_f m} = \frac{0.69}{5.12 \times \left(\frac{15}{94} \right)} = i = 0.845$$



$$1-x \quad \frac{x}{2}$$

$$i = 1 - x + \frac{x}{2} = 1 - \frac{x}{2}$$

$$0.845 = 1 - \frac{x}{2}$$

$$\frac{x}{2} = (1 - 0.845)$$

$$x = 0.31$$

$$\boxed{31\%}$$

50. **Ans (3)**

The electrode with high R.P. will act as a cathode and electrode with more -ve R.P. acts as anode

51. **Ans (4)**

$$\text{Moles of N} = \frac{28}{14} = 2$$

$$\text{Moles of O} = \frac{64}{16} = 4$$

∴ Formula, N_2O_4

71. **Ans (1)**

$\text{Mn}^{+2} = 3d^5 4s^0$ (Maximum unpaired e^{-1} s)

$\text{Fe}^{+2} = 3d^6 4s^0$

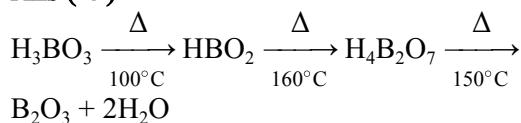
$\text{Cr}^{+3} = 3d^3 4s^0$

$\text{Ni}^{+2} = 3d^8 4s^0$

73. **Ans (1)**

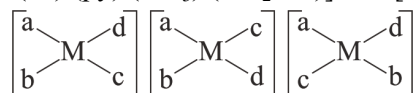
Chlorides of Ag are insoluble, while chlorides of Ba and Ca imparts colour to Bunsen flame. Thus Mg is correct.

74. **Ans (4)**



75. **Ans (3)**

$[\text{Pt}(\text{Cl})(\text{py})(\text{NH}_3)(\text{NH}_2\text{OH})]^+ \Rightarrow [\text{M abcd}]$



No. of geometrical isomers = 3

76. **Ans (1)**

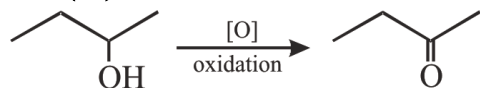
$\text{BF}_3 \quad \text{BCl}_3 \quad \text{BBR}_3$

Back bond formation tendency decreases so lewis acidic strength increases.

77. **Ans (2)**

Tenth element (Ne) is noble gas, hence it resembles with second element (He) which is also a noble gas.

78. **Ans (4)**



79. **Ans (1)**

Cyclopentadiene is stronger acid than Propyne as its conjugate Base is aromatic.

i.e., cyclopentadiene anion (aromatic) will not converted into cyclopentadiene (non aromatic)

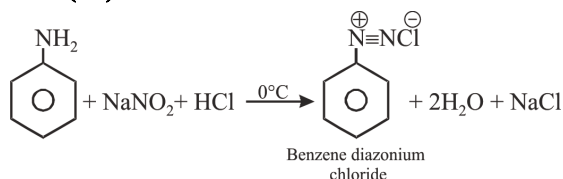
80. **Ans (2)**

$\text{CH}_2=\text{CH}-\text{CH}_3$ and
Chain Ring
That's why ring chain isomers.

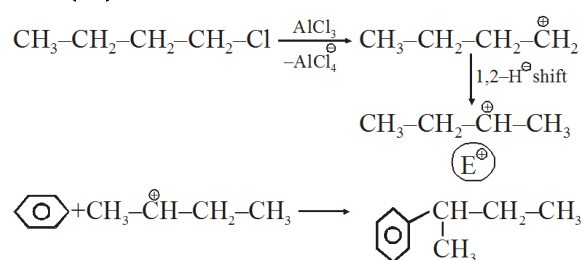
81. **Ans (4)**

Due to intermolecular hydrogen bonding in alcohols boiling points of alcohol is much higher than ether.

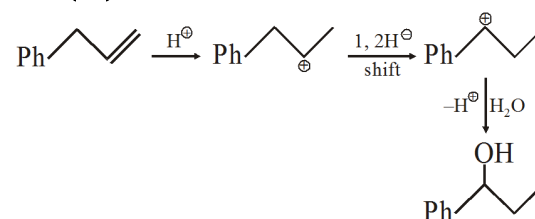
82. **Ans (2)**



83. **Ans (3)**



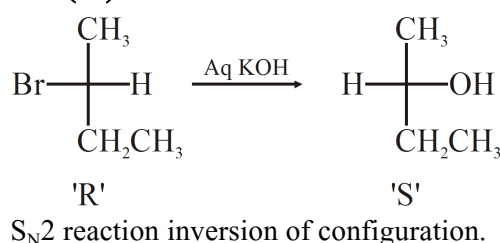
84. **Ans (2)**



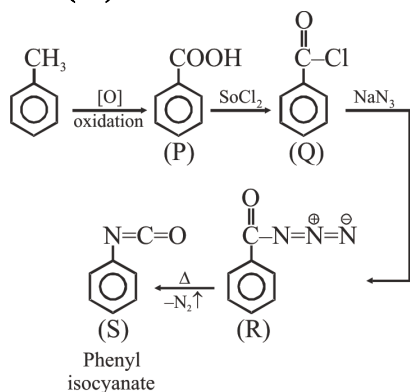
85. **Ans (2)**

$\text{H}_2\text{O} + \text{CCl}_3^+ \rightarrow :\text{CCl}_2$ (Electrophile)

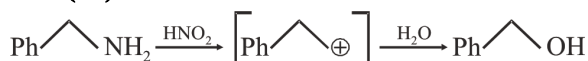
86. **Ans (2)**



89. Ans (3)



90. Ans (3)



94. Ans (2)

NCERT-XI ; Page No # 325

96. Ans (2)

NCERT-XI ; Page No # 271

97. Ans (4)

NCERT-XI ; Page No # 294, 293

99. Ans (2)

NCERT-XI ; Page No # 304

100. Ans (1)

NCERT-XII ; Page No # 29(E), 31(H)

102. Ans (2)

NCERT-XII ; Page No # 22(E), 23(H)

103. Ans (3)

NCERT-XII ; Page No # 37(E), 39(H)

106. Ans (2)

NCERT-XI ; Page No. # 75

107. Ans (3)

NCERT-XI ; Page No. # 80

108. Ans (2)

NCERT-XI ; Page No. # 90, 91, 92, 93

109. Ans (2)

NCERT-XI ; Page No. # 85

110. Ans (4)

NCERT-XI ; Page No. # 91

111. Ans (4)

NCERT-XII ; Page No. # 138 to 140 ; Para - 7.8

113. Ans (2)

NCERT-XII ; Page No. # 131 ; Para - 7.3

115. Ans (2)

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125. Ans (4)

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128. Ans (2)

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131. Ans (4)

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134. Ans (3)

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135. Ans (4)

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136. Ans (4)

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137. Ans (3)

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138. Ans (1)

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139. Ans (2)

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140. Ans (2)

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142. Ans (4)

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146. Ans (2)

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147. Ans (1)

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148. Ans (4)

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149. Ans (2)

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152. Ans (2)

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153. Ans (1)

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155. Ans (3)

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156. Ans (1)

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159. Ans (3)

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162. Ans (1)

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164. Ans (3)

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166. Ans (1)

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167. Ans (2)

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170. Ans (3)

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171. Ans (2)

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172. Ans (1)

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173. Ans (4)

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176. Ans (3)

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180. Ans (2)

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