R ANSWER KEY & SOLUTION KEY FINAL ROUND - 08 (PCB) Dt.16.04.2024

PHYSICS

SECTION - A (35 Questions)

01. **(3)** Here, M = 2×10^4 J T^{-1}, B = 6×10^{-4} T

W = ? $\theta_1 = 0^0, \theta_2 = 60^0$

$W = MB(\cos\theta_1 - \cos\theta_2)$

$= (2 \times 10)^4 \times (6 \times 10^{-4})(\cos 0^0 - \cos 60^0)$

$= 12\left(1 - \frac{1}{2}\right) = 6$ J

02. **(1)** $v_B \sin 45° = v_A \Rightarrow v_B = \sqrt{2}v_A$

(For same Height vertical component will be same)

$\therefore \frac{K_A}{K_B} = \frac{v_A^2}{v_B^2} = \frac{1}{2}$.

03. **(2)** In case of inductive circuit emf leads current by $\pi/2$ rad

04. **(3)** According to situation given

$v = u - at$

$y = c - mx$

So, option (3) is correct.

05. **(1)** Work = Area under (F-d) graph

= 8 + 5 = 13 J .

06. **(2)** m_1 = 10kg, m_2 = 2 kg

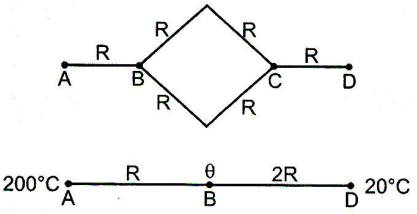
$\vec{v}_1 = 2\hat{i} - 7\hat{j} + 3\hat{k}$ and $\vec{v}_2 = -10\hat{i} + 35\hat{j} - 3\hat{k}$

$\therefore \vec{v}_{CM} = \frac{m_1\vec{v}_1 + m_2\vec{v}_2}{m_1 + m_2}$

$= \frac{10(2\hat{i} - 7\hat{j} + 3\hat{k}) + 2(-10\hat{i} + 35\hat{j} - 3\hat{k})}{10 + 2}$

$= 2\hat{k}$ m/s.

07. **(3)** Let the thermal resistance of each rod be R
Effective thermal resistance between B and D = $2R$



Temperature of interface = $\theta = \frac{R_1\theta_2 + R_2\theta_1}{R_1 + R_2}$

$\theta = \frac{R \times 20 + 2R \times 200}{R + 2R} = \frac{420}{3} = 140°C$

08. **(3)**

09 (4) Let the spherical conductors B and C have same charge q. The electric force between them is

$F = \frac{1}{4\pi\varepsilon_0}\frac{q^2}{r^2}$ r, being the distance between them.

When third uncharged conductor A is brought in contact with B, then charge on each conductor

$q_A = q_B = \frac{q_A + q_B}{2} = \frac{0 + q}{2} = \frac{q}{2}$

Hence, electric force acting between B and C is

$F' = \frac{1}{4\pi\varepsilon_0}\frac{qBqC}{r^2} = \frac{1}{4\pi\varepsilon_0}\frac{q(q/2)}{r^2} = \frac{F}{2}$.

10. (2) $M = i(\pi r^2) = \frac{ev}{2\pi r} \times \pi r^2 \Rightarrow M = \frac{1}{2}$evr

11. (2) Here $V = \frac{4}{3}\pi r^3$

$\therefore \frac{\Delta V}{V} \times 100 = 3\frac{\Delta r}{r} \times 100 = 3 \times 2\% = 6\%$.

12. (1) As the inductors are in parallel, therefore, induced *e.m.f.* across the two inductors is the same, *i.e.*, $e_1 = e_2$

$L_1\left(\frac{di_1}{dt}\right) = L_2\left(\frac{di_2}{dt}\right)$

Integrating both sides w.r.t. t, we get

$L_1 i_1 = L_2 i_2 \ \therefore \ \frac{i_1}{i_2} = \frac{L_2}{L_1}$

13. **(2)** $\frac{n_p}{n_s} = \frac{E_p}{E_s} = \frac{1}{25} \therefore E_s = 25\ E_p$

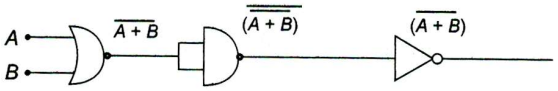
But $E_S I_S = E_p I_p \ \Rightarrow I_p = \frac{E_S \times I_S}{E_p} \Rightarrow I_p = 50\ A$

14. **(4)** $v = \frac{c}{\sqrt{\mu_r \varepsilon_r}} = \frac{3\times10^8}{\sqrt{1.3\times2.14}} = 1.8\times10^8$ m/sec.

15. **(3)** $v = \frac{c}{\lambda} = cR\left(\frac{1}{p^2} - \frac{1}{n^2}\right) = cR\left(\frac{1}{4} - \frac{1}{16}\right)$

$= \frac{3\times10^8 \times10^7 \times12}{64} = \frac{9}{16}\times10^{15}\ Hz.$

16. **(1)**



NOR gate

17. **(4)**

18. **(2)** When bigger pendulum of time period (5T/4) completes one vibration, the smaller pendulum will complete (5/4) vibrations. It means the smaller pendulum will be leading the bigger pendulum by phase $\frac{T}{4}\sec = \frac{\pi}{2} rad = 90°.$

19. **(4)** In the given equation, let $a_1 = a_2 = a$

Let $\phi_1 - \phi_2 = \phi$

As $A^2 = a_1^2 + a_2^2 + 2a_1a_2\cos\phi$

$\therefore \quad a^2 = a^2 + a^2 + 2a^2\cos\phi$

$\cos\phi = -\frac{1}{2};\ \phi = 2\pi/3$

20. **(4)** Fringe width $(\beta) = \frac{D\lambda}{d}$

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

$\Rightarrow \frac{\beta_2}{2\text{ mm}} = \frac{600\text{ nm}}{400\text{ nm}} = \frac{3}{2}$

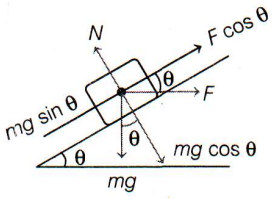
$\Rightarrow \beta_2 = 3mm$

21. **(2)** Pitch $= \frac{4\,mm}{8} = \frac{1}{2}mm$

$L.C. = \frac{\text{Pitch}}{\text{Total no. of div.}} = \frac{1/2}{100} = \frac{1}{200} = 0.005$ mm

22. **(1)** Given, $m = 8$ kg and $\theta = 30°$

For friction to be minimum, from the diagram below, the component of force should be balanced by the component of weight along the inclined surface.



i.e. $F\cos\theta = mg\sin\theta$

$\Rightarrow F = mg\tan\theta = 8\times10\times\tan30^0 = \frac{80}{\sqrt{3}}$

23. **(1)**

24. **(2)** $T_A = 20$ N and $T_B = T_C = \frac{20}{3}$ N.

25. **(1)**

26. **(2)** From KE $= \frac{p^2}{2m} = mgh$

$p = \sqrt{2m^2gh} = \sqrt{2\times(50)^2\times10\times0.8}$

$p = 200$ kg m/s.

27. **(3)**

28. **(3)** $\frac{v}{1} - \frac{v}{2} = \frac{40}{10} \ \Rightarrow v = 8\,\text{ms}^{-1}$

29. **(4)** $m_\infty = \frac{f_o}{f_e} = \frac{50}{5} = 10$

30. **(2)** Charge on glass rod is positive, so charge on gold leaves will also be positive. Due to X-rays, more electrons from leaves will be emitted, so leaves becomes more positive and diverge further.

31. **(4)** Shortest wavelength emitted by H atom i series limit of Lyman series $\lambda_{min} = \frac{1}{R} = 912\,Å >>$ wavelength of X-rays which lies between 1 Å t 100 Å.

32. **(2)** Magnetic flux through the loop is upwards and it is increasing due to increasing current along *AB*. Current induced in the loop should have magnetic

flux in the downward direction so as to oppose the increase in flux.

Therefore, current induced in the loop is clockwise.

33. **(1)** Momentum of bullet = momentum of rifle = p

$K_{bullet} = \frac{p^2}{2m}$, m : mass of bullet

$K_{rifle} = \frac{p^2}{2M}$, M : mass of rifle

Since $M > m$, $K_{rifle} < K_{bullet}$.

34. **(1)**

In a stream line flow a liquid, according to equation of continuity, Av = constant.

Where A is the area of cross section and v is the velocity of liquid flow. When water flowing in a broader pipe enters a narrow pipe, the area of cross-section of water decreases therefore the velocity of water increases.

Hence, the correct answer is option (1).

35. **(2)** $g \propto \frac{1}{R^2}$

R decreases $\rightarrow$ g increases hence, curve b represents correct variation.

SECTION - B (Attempt Any 10 Questions)

36. **(2)** $m = \frac{v}{u}$

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

Multiply the equation by v

$1 - \frac{v}{u} = \frac{v}{f} \Rightarrow \frac{v}{u} = 1 - \frac{v}{f}$ $\quad \therefore m = 1 - \frac{v}{f}$

Slope $= -\frac{1}{f} = \frac{b}{c} \Rightarrow f = \frac{c}{b}$.

37. **(3)** Let n be the number of electrons missing.

$F = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q^2}{d^2} \Rightarrow q = \sqrt{4\pi\varepsilon_0 d^2 F} = ne$

$\therefore \; n = \sqrt{\frac{4\pi\varepsilon_0 F d^2}{e^2}}$.

38. **(2)** As I = $neAV_d$ So $Vd \propto \frac{1}{A}$

$As \; J = \sigma E \; So \; E \propto J$

39. **(2)** The relation between de-Broglie wavelength λ and kinetic energy K of the particle is given by

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

Here, for the given value of energy K, $\frac{h}{\sqrt{2K}}$ is a constant.

Thus, $\lambda \propto \frac{1}{\sqrt{m}}$

$\therefore \lambda_p : \lambda_n : \lambda_e : \lambda_\alpha = \frac{1}{\sqrt{m_p}} : \frac{1}{\sqrt{m_n}} : \frac{1}{\sqrt{m_e}} : \frac{1}{\sqrt{m_\alpha}}$

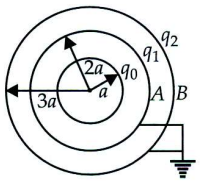
Since, $m_e < m_p = m_n < m_\alpha$

Hence, $\lambda_\alpha < \lambda_p = \lambda_n < \lambda_e$

40. **(2)** Since the middle and outermost shells are earthed, therefore their potential on their surfaces will be zero. Let the charges on the middle and outermost shells be q_1 and q_2 respectively. Then

$V_A = \frac{q_0}{2a} + \frac{q_1}{2a} + \frac{q_2}{3a} = 0$

and $V_B = \frac{q_0}{3a} + \frac{q_1}{3a} + \frac{q_2}{3a} = 0$

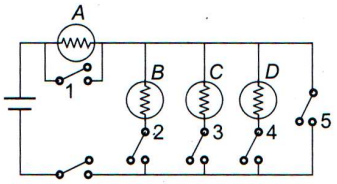


These imply

$3q_0 + 3q_1 + 2q_2 = 0, q_0 + q_1 + q_2 = 0$

$\therefore \; q_1 = -q_0; q_2 = 0$.

41. **(3)**



Closing switch 1 will short circuit bulb A, closing switch 5 will short circuit BCD, so these switches should not be closed.

42. **(3)** We know that the dimension of young's modulus is $[ML^{-1}T^{-2}]$

C.G.S. unit ; gm cm^{-1} sec^{-2} and M.K.S. unit; kg. m^{-1} sec^{-2}. By using the conversion formula :

$n_2 = n_1 \left[\frac{M_1}{M_2}\right]\left[\frac{L_1}{L_2}\right]^{-1}\left[\frac{T_1}{T_2}\right]^{-2} = \left[\frac{gm}{kg}\right]^1\left[\frac{cm}{meter}\right]^{-1}\left[\frac{sec}{sec}\right]^{-2}$

$\therefore$ conversion factor $\frac{n_2}{n_1} = \left[\frac{gm}{10^3\,gm}\right]^1\left[\frac{cm}{10^2\,cm}\right]^{-1}\left[\frac{sec}{sec}\right]^{-2}$

$= \frac{1}{10} = 0.1$.

43. **(4)** Here, $\frac{I_{max}}{I_{min}} = \frac{36}{1} = \frac{(a+b)^2}{(a-b)^2}$

$\therefore \frac{a+b}{a-b} = \frac{6}{1}$

$6a - 6b = a + b$

$5a = 7b \therefore \frac{a}{b} = \frac{7}{5}$

44. **(1)** Area of hysteresis loop gives the energy loss in the process of stretching and unstretching of rubber band and this loss will appear in the form of heating.

45. **(1)** $x = 2\sin(2t + \frac{\pi}{3})$

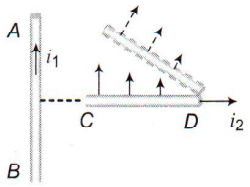
Comparing it with the equation of SHM,

$x = a\sin(\omega t + \phi)$, we have

$\phi = \frac{\pi}{3} rad; \omega = 2$

or $\frac{2\pi}{T} = 2$ *or* $T = \pi$s.

46. **(3)** Since the force on the rod CD is non-uniform, it will experience force and torque. From the left hand side, it can be seen that the force will be upward and torque is clockwise.



47. **(4)** $R = R_0 A^{1/3}$

$R^3 \propto A$

$\left(\frac{4.8}{4}\right)^3 = \frac{64}{A}$

$\frac{64}{A} = 1.44 \times 1.2$

$A = \frac{64}{1.44 \times 1.2} = \frac{1000}{x}$

$x = \frac{144 \times 12}{64} = 27.$

48. **(4)** The rate of change of angular velocity is angular acceleration.

Angular acceleration = $\omega_2 - \omega_1 / t_2 - t_1$

49. **(4)** Let P_1 and P_2 be the pressure at the bottom of the left end and right end of the tube respectively. Then:

$F = (P_1 - P_2)A = \rho ghA$

where A is the cross-section of the tube.

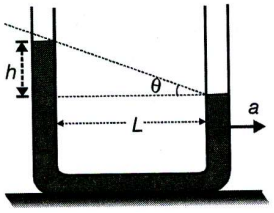
The mass of the liquid in the horizontal portion is

$m = \rho LA$

Now $F = ma$

So $\rho ghA = \rho LAa$

$\therefore h = \frac{aL}{g}$



Hence, the correct answer is option (4)

50. **(2)**

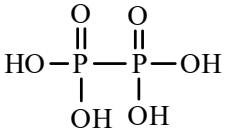
$\frac{(v_{rms})_{O_2}}{(v_{rms})_{H_2}} = \sqrt{\frac{T_{O_2}}{T_{H_2}} \frac{(M_0)_{H_2}}{(M_0)_{O_2}}} = \sqrt{\frac{1200}{300} \frac{2}{32}} = \frac{1}{2}.$

$(v_{rms})_{O_2} = \frac{(v_{rms})_{H_2}}{2} = \frac{1930}{2} = 965$m/s.

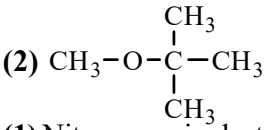
CHEMISTRY

SECTION - A (35 Questions)

51. **(1)** Hypophosphoric acid ($H_4P_2O_6$) is



52. **(3)** Carbon has 2 electrons in their penultimate shell configuration so due to d-orbital in penultimate shell is false statement.

53. **(2)** 

54. **(1)** Nitro group is electron-withdrawing, hence it stabilised the carbanion by dispersing the negative charge on the carbon. So both the assertion as well as reason are true and reason is correct explanation of the assertion.

55. **(3)** $AgI \rightleftharpoons \underset{s}{Ag^+} + \underset{s}{I^-}$

$K_{sp} = s \times s$

$1.0 \times 10^{-16} = s \times 10^{-4}$

$$\therefore \quad s = \frac{1.0\times10^{-16}}{10^{-4}} = 1\times10^{-12}\ \text{mol/L}$$

56. **(3)** ΔS has negative value if number of gaseous moles decreases during a reaction $\Delta n_g = -ve$.

For the reaction

$$2SO_2 + O_2 \rightarrow 2SO_3$$

$$\Delta n_g = 2 - 3 = -1$$

57. **(2)** If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.

58. **(3)** i, iv, v

59. **(1)** Since, in the first reaction gaseous products are forming from solid carbon hence entropy will increase i.e. $\Delta S = +ve$.

$$C\ \text{graphite} + \frac{1}{2}O_2(g) \rightarrow CO(g)\ ;\ \Delta S = +ve.$$

Since, $\Delta G = \Delta H - T\Delta S$ hence the value of ΔG decrease on increasing temperature.

60. **(2)** $A \rightarrow (r); B \rightarrow (s); C \rightarrow (p); D \rightarrow (q)$

61. **(1)** Let the number of Cl^- ions outside the coordination sphere or number of chloride ions which can be ionised be n. When the solution of the complex is passed through cation exchanger, nCl^- ions will combine with H^+ (of the cation exchanger) to form HCl.

$$nCl^- + nH^+ \rightarrow nHCl$$

Thus, 1 mole of the complex will form n mole of HCl.

1 mol of complex = n mol HCl = n mol NaOH

$$\text{mol of the complex} = \frac{0.319}{266.7} = 0.0012$$

$$\text{mol of NaOH used} = \frac{28.5\times0.125}{1000} = 0.0036\ \text{mol}$$

0.001 mol of complex = 0.0036 mol NaOH

= 0.0036 mol HCl

$$1\ \text{mol of complex} = \frac{0.0036}{0.0012} = 3\ \text{mol HCl}$$

$\therefore$ n = 3

Thus, all the Cl^- ions are outside the coordination sphere. Hence, complex is $[Cr(H_2O)_6]Cl_3$.

62. **(1)** Excess of copper and iron are removed by the chelating ligands D-penicillamine and desferrioxime B via the formation of coordination compounds.

63. **(3)** Racemic mixture is optically inactive because of external compensation.

64. **(1)** Cannizzaro reaction involves H-transfer Clemmensen reduction involves the formation of new C – H bond. Friedel craft and Reimer-Tiemann reaction involves the formation of new C – C bonds.

65. **(2)** H_2O_2 is reducing Cl_2 to Cl^-

66. **(2)** $Fe^{2+} \rightarrow [Ar]3d^64s^0$

$Cr \rightarrow [Ar]3d^54s^1$

67. **(1)** Statement-1 is true, Statement-2 is true

68. **(1)**

$$4NaCl + K_2Cr_2O_7 + 6H_2SO_4(\text{conc.}) \xrightarrow{\Delta} 2KHSO_4 + 4NaHSO_4 + 2CrO_2Cl_2 + 3H_2O$$

(Orange red)

Chromyl chloride

69. **(4)** Among the given statements, A, D and E are correct, while and B and C are incorrect. Their correct form is:

- A cyclic compound which contains one or more hetero atom in its ring other than carbon is known as heterocyclic compound.
- The organic reactions which proceed through heterolytic bond cleavage are called polar reactions.

70. **(2)** Among the given compounds, +R effect is shown by (ii), (iii), (vi) and (vii).

71. **(4)** In Rutherford's experiment, most of the α-particles passed through the gold foil undeflected and a very few α-particles were deflected because most of the space in the atom is empty and the positive charge is concentrated in a very small volume that repelled and deflected the positively charged α-particles.

72. **(4)** Using Pauli law no two e^- can have a same set of n, l, m and s. If n, l, m are same, s-values are different

e.g. ${}_4Be \rightarrow 1s^2, 2s^2$

First	Second e^-
$n \rightarrow 2$	2
$\ell \rightarrow 0$	0
$m \rightarrow 0$	0
$s \rightarrow +1/2$	$-1/2$

73. **(2)** Higher the EN of the element more is the polar character and EN of F > O > N > S.

74. **(2)** Due to high EN of F than N, H-bonding is stronger in HF than NH_3 thus b.pt. of HF > NH_3.

75. **(2)**

$NO_3^{\ominus}$: Number of e^-,s = (7 + 8 × 3 + 1) = 32

Hybridisation of N is sp^3.

CO_3^{2-} : Number of e⁻'s = (6 + 8 × 3 + 2) = 32

Hybridisation of C is sp^3.

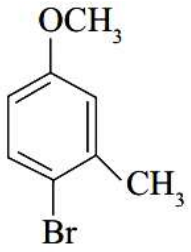
$ClO_3^{\ominus}$: Number of e⁻'s = (17 + 8 × 3 + 1) = 42

Hybridisation of Cl is sp^3.

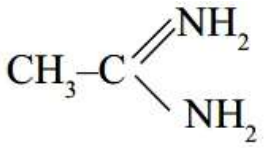
SO_3: Number of e⁻'s = (16 + 8 × 3) = 40

Hybridisation of S is sp^2.

76. **(2)**



77. **(1)**



78. **(3)**

For an endothermic reaction, ΔH > zero.

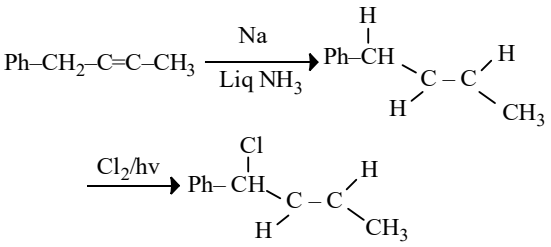
79. **(4)** Collision frequency $\propto$ no. of reacting molecules or atoms.

Higher the concentration of reactant molecules, higher is the probability of collision and so the collision frequency.

80. **(1)** If both assertion and reason are true and reason is the correct explanation of assertion.

81. **(2)** F > O > Cl > N

82. **(1)**



83. **(1)** Aldehydes and ketones respectively

84. **(3)**

The equation is derived from Nernst equation assuming equilibrium condition in a cell reaction, when

E = 0

85. **(3)** According to Raoult's law

$$P = P^{o}\left(\frac{n_2}{n_1 + n_2}\right)$$

SECTION - B (Attempt Any 10 Questions)

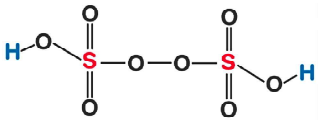
86. **(2)** Pb^{2+}, Ba^{2+}

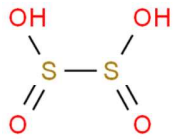
87. **(1)** Mol. Wt. = 2 × vapour density = 2 × 29 = 58

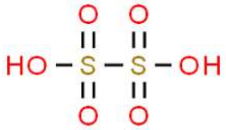
Two compounds CH_3COCH_3 and CH_3CH_2CHO show molecular weight 58. CH_3COCH_3 does not produce yellow ppt. on warming with aq. Solution of NaOH. Hence CH_3CH_2CHO is the compound.

88. **(2)** Among the given isomers only (ii), (iii) and (iv) are isomers of C_8H_8O. Because they have same molecular formula and same value of degre of unsaturation i.e., 5, while (i) and (v) are not the isomers of C_8H_8O.

89. **(3)**







90. **(2)** Energy of electromagnetic radiation (E)

$$= \frac{hc}{\lambda} = h\upsilon$$

So, $\frac{c}{\lambda} = \upsilon$

$$\Rightarrow \frac{c}{\upsilon} = \lambda$$

$$\lambda = \frac{3\times10^{8}}{1368\times10^{3}} = 219.3\,m$$

91. **(4)** 3 > 1 > 2

92. **(2)** Fractional distillation method is used if the difference in boiling points of two liquids is not much.

93. **(2)** Let A be the atomic weight of metal

1 mol of metal = Ag

96500 C $\Rightarrow$ Ag

$$9.65 \times 10 \times 60 \Rightarrow \frac{A}{96500} \times 9.65 \times 10 \times 60$$

$\therefore A \times 0.06 = 3$ g

$$A = \frac{3}{0.06} = 50$$

94. **(2)** In electrolytic cell, flow of electron is possible from cathode to anode through internal supply.

95. **(1)** $2NaOH + Cl_2 \longrightarrow NaCl + NaOCl + H_2O$

$Na^+ + Cl^-$ $\quad$ $Na^+ + OCl^-$

96. **(1)** $[Ag(CN)_2]^-$ is linear (sp) with no unpaired electron, hence magnetic moment = 0.

97. **(4)** $CH_3CH_2COONa \xrightarrow{\text{Soda lime}} CH_3CH_3$

$\xrightarrow{Cl_2/uv-light} CH_3CH_2Cl$

$\xrightarrow[\text{dry ether}]{2Na} CH_3CH_2CH_2CH_3$

98. **(1)** $C_6H_5-CHOH-CH_3 \xrightarrow{[O]} C_6H_5-COCH_3$

1-Phenylethanol $\quad$ acetophenone

$C_6H_6 + CH_3COCl \xrightarrow[\text{reaction}]{F.C.} C_6H_5COCH_3 + HCl$

99. **(1)** 100 gram solution $\rightarrow$ 2 gram NaCl

98 gram solvent $\rightarrow$ 2 gram NaCl

$$M = \frac{\frac{2}{58.5}}{\frac{98}{1000}} = 0.35$$

(Density of water = 1 gram/ml)

100. **(2)**

$1/2A \rightarrow B$	+150	...(1)
$3B \rightarrow 2C + D$	–125	...(2)
$E + A \rightarrow 2D$	+350	...(3)

To calculate ΔH operate

2 × eq. (1) + eq. (2) – eq. (3)

$\Delta H = 300 - 125 - 350 = -175$

BOTANY

Section - A (35 Questions)

101. **(2)** (11th Para10.2 based conceptual)
102. **(4)** (11th Para 10.4.1, Page no. 168)
103. **(4)** (11th Para 8.5.3.2, Page no. 133)
104. **(1)** (11th Para 8.5.10, Page no. 138)
105. **(1)** [NCERT XI; Page No. 70; Sub-topic 5.3.2]
106. **(3)** [NCERT XI; Page No. 72; Sub-topic 5.5]
107. **(2)** [NCERT XI; Page No. 72; Sub-topic 5.4]
108. **(2)** (NCERT XII, Pg 82, Para 2, Line 4)
109. **(4)** (NCERT XII, Pg 90, Figure 5.15)
110. **(4)** (NCERT XII, Pg 86, Last Para , Line 4)
111. **(1)** (NCERT XII, Pg 91, Chromosomal Disorders, Line 4)
112. **(3)** (NCERT XII, Pg 96, Para 3, Line 5)
113. **(1)** (NCERT. XI plant kingdom Page no- 36, 3.3)
114. **(3)** (NCERT 11th, Page no- 21,Paragraph- 2.2.4, Line no- 7)
115. **(4)** (NCERT XII, Pg 97, Para 2, Line 1)
116. **(4)** (NCERT XII, Pg 99, Para 5, Line 11)
117. **(2)** (NCERT XII, Pg 106, The Machinery and the Enzymes, Line 9)
118. **(3)** [NCERT class XI, Page no. 90, Point 6.3.1 (Line no. 04)]
119. **(1)** [NCERT class XI, Page 250, Point 15.4.3.4, (Second paragraph)]
120. **(1)** (NCERT XI Pg.229, 7th Line, 1st Para)
121. **(1)** (11th Para 10.4.1 based / Page no.168)
122. **(4)** (NCERT 11th, Page no- 23, Paragraph- 2.3.2, Line no- 2)

(Page no 24, 1st paragraph, Line no- 8)
123. **(3)** (NCERT 12th, Page no-39, 2nd Paragraph, Line no-19, 20)
124. **(1)** [NCERT class XI, Page 245, Point 15.2, First paragraph]
125. **(4)** (NCERT XIth Page No.228, 14.2, 5th line)
126. **(4)** (NCERT. XII Page no- 243 to 244)
127. **(3)** [NCERT class XI, Page no. 88, Line no. – 20-21]
128. **(2)** (NCERT 11th, Living world, Paragraph- 1.3 and table 1.1)
129. **(2)** (NCERT XI page no. 221, Table 13.1)
130. **(2)** (NCERT- page no. 211, point 13.5- last 3 lines)
131. **(4)** (NCERT XII, Pg 97, Figure 5.7)
132. **(3)** (NCERT. XI plant kingdom Page no- 29 to 30)
133. **(4)** (NCERT 12th, Page no- 37, Last paragraph, Line no- 2,3)
134. **(2)** (NCERT 12th, Page no- 23, 2nd Paragraph, Line no- 1,2)
135. **(3)** (NCERT page no- 26, 1st paragraph, 1st line)

Section - B (Attempt Any 10 Questions)

136. **(1)** (11th Para 8.5.1, Page no. 132)
137. **(2)** (NCERT XII, Pg 98, Point v)
138. **(4)** (NCERT XI page no. 214, last paragraph)

139. **(3)** [NCERT XI; Page No. 75; Sub-topic 5.5.1.3]
140. **(4)** (NCERT XII, Pg 70, Para 3, Line 4)
141. **(1)** [NCERT class XI, Page no. 90 (Point 6.3.1), 93 (Line no. 02-04), 93 (Point 6.3.5)]
142. **(2)** (NCERT 11th, Page no-7, Last paragraph, Line no- 33,34)
143. **(4)** (NCERT 11th, Page no- 23, Paragraph-2.3.1, Line no- 6,7)
144. **(3)** (NCERT XI plant kingdom Page no- 37, fig. 3.3)
145. **(2)** (NCERT XII, Pg 98, Last para, Line 4)
146. **(2)** (NCERT 12th, Page no-36, 3rd Paragraph, line no-26 and 27)
147. **(1)** (NCERT XI Pg.233, 2nd Para, 9th line)
148. **(1)** (NCERT. XII Page no- 248 concept)
149. **(3)** (11th Para 8.5.2, Page no. 132)
150. **(3)** (NCERT. XI plant kingdom Page no- 38, last para of 3.3)

ZOOLOGY

Section - A (35 Questions)

151. **(4)** (NCERT11th page no 117, para1)
152. **(4)** (12th Para, 10.4,10.5, Page no.185,168)
153. **(4)** (NCERT XI Page No. 337, 3rd paragraph)
154. **(3)** (NCERT XI Page No. 333 (last paragraph), 334 (3rd paragraph)
155. **(3)** (NCERT XI Page No. 293; 4th line of 2nd paragraph)
156. **(1)** (NCERT XI Page No. 298; Last paragraph)
157. **(1)** [NCERT P.No.310, 2nd para]
158. **(4)** [NCERT P.No.321, Hind Brain para, last Line]
159. **(2)** [NCERT P.No.321, 5th Line]
160. **(2)** (NCERT XI Page No. 58; examples of aves)
161. **(2)** (NCERT Pg.No. 273, Exchange of gases)
162. **(2)** (NCERT 12th, HR)
163. **(2)** (NCERT12th, page no58, para1)
164. **(2)** (NCERT12th, page no48)
165. **(2)** (NCERT Pg.No. 158, Drug & Alcohol abuse)
166. **(3)** (NCERT Pg. No.285)
167. **(2)** (12th Para 10.6 , Page no.169, 170)
168. **(2)** [NCERT P.No.310 12th Line]
169. **(3)** [NCERT P.No.208, Last para]
170. **(3)** [NCERT P.No.211, 12th Line]
171. **(1)** [NCERT P.No.304, Last Para]
172. **(2)** (NCERT 12th, page no- 131, last paragraph, line no- 6,7)
173. **(3)** (NCERT. XII Page no- 236)
174. **(3)** (NCERT Pg. No.159)
175. **(3)** (NCERT XIIth Page No.202 : 11.3.3 : Amplification of Gene of Interest)
176. **(3)** (NCERT Pg.No. 273, External respiration)
177. **(2)** (NCERT 11th, Page no- 150, 1st paragraph, Line no- 11,12, 21, 22, 23)
178. **(2)** (NCERT page no. 286, Exchange of gases)
179. **(3)** (NCERT Pg.No. 154, AIDS)
180. **(1)** (NCERT. XII Page no- 266)
181. **(2)** (NCERT 11th, Page no- 149, Paragraph-9.6, Line no- 1-4)
182. **(1)** (NCERT 12th, Evolution concept Based)
183. **(3)** (NCERT 12th, Page no- 137, 3rd paragraph, Line no- 1 and 2)
184. **(3)** (NCERT12th page no 59, para 2)
185. **(3)** (NCERT page no 101, last para)

Section - B (Attempt Any 10 Questions)

186. **(3)** (NCERT12th page no 60, para 1)
187. **(3)** [NCERT P.No.320, 1st para]
188. **(3)** (NCERT page no43, para3)
189. **(2)** (NCERT. XII Page no- 258 to 262)
190. **(4)** (NCERT XII Page no- 219)
191. **(2)** (NCERT 11th, Page no- 155, 2nd paragraph, Line no- 4,5)
192. **(2)** (NCERT page no-129, last paragraph, line no-39-42)
193. **(2)** (NCERT Pg.No. 281, Coagulation of blood)
194. **(2)** (NCERT Pg.No. 146, Common diseases in human)
195. **(3)** [NCERT P.No.303 Last 2 para & 304 1st para]
196. **(4)** (NCERT XI Page No. 334; 11th line of 2nd paragraph)
197. **(4)** (NCERT XI Page No. 57; class - osteichthyes)
198. **(1)** [NCERT P.No.202, Fig 11.6]
199. **(2)** (NCERT11th page no 114, para2)
200. **(2)** (12th Para10.3 ,10.5, Page no.184)