R ANSWER KEY & SOLUTION KEY FINAL ROUND - 12 (PCB) Dt.21.04.2024

PHYSICS

SECTION - A (35 Questions)

01. **(1)** Work done W = $\vec{F} \times \vec{S}$

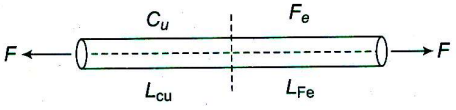
Here, displacement in the direction of force is R, so

Work done = FR

02. **(1)** In a purely inductively or capacitive circuit, power factor, $\phi = 0$ and no power is dissipated even though a current is flowing in the circuit. In such case, current is referred to as wattless current.

03. **(4)**

04. **(2)**



Stress is same $\sigma = F / A$

Stain $\in_{Cu} = \frac{\sigma}{Y_{Cu}}, \in_{Fe} = \frac{\sigma}{Y_{Fe}}$.

05 **(1)**

06. **(1)** Solid sphere reaches the bottom first because

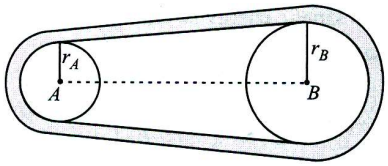
for solid cylinder $\frac{K^2}{R^2} = \frac{1}{2}$ and for hollow cylinder

$\frac{K^2}{R^2} = 1$

Acceleration down the inclined plane $\propto \frac{1}{K^2 / R^2}$.

Solid cylinder has greater acceleration , so it reaches the bottom first.

07. **(1)**



As the belt does not slip, $v_A = v_B$

or $r_A \omega_A = r_B \omega_B$ or $\frac{\omega_A}{\omega_B} = \frac{r_B}{r_A} = 3$

If both the wheels have same angular momentum, then

$I_A \omega_A = I_B \omega_B$ or $\frac{I_B}{I_A} = \frac{\omega_A}{\omega_B} = 3$

08. **(1)** $\frac{dQ}{dt} = \frac{KA\Delta\theta}{l}$

For both rods K, A and $\Delta\theta$ are same.

$\therefore \frac{dQ}{dt} \propto \frac{1}{l}$

So $\frac{(dQ/dt)_{\text{Semicircular}}}{(dQ/dt)_{\text{Straight}}} = \frac{l_{\text{Straight}}}{l_{\text{Semicircular}}} = \frac{2r}{\pi r} = \frac{2}{\pi}$

09. **(2)** Current density $J = \frac{i}{A} = \frac{i}{\pi r^2} \Rightarrow \frac{J_1}{J_2} = \frac{i_1}{i_2} \times \frac{r_2^2}{r_1^2}$

But the wires are in series, so they have the same current, hence $i_1 = i_2$. So $\frac{J_1}{J_2} = \frac{r_2^2}{r_1^2} = 9:1$

10. **(1) (A)→(2); (B)→(1); (C)→(4); (D)→(3)**

11. **(3)** At the time of maximum elongation

$\Delta PE_g = \Delta PE_s$

$Mgx = \left(\frac{1}{2}k_1 x^2 + \frac{1}{2}k_2 x^2\right) - 0$

$4(10)\, x = \frac{1}{2}\,(400)\, x^2$

$x = \frac{1}{5} m \Rightarrow x_{\max} = 20$ cm

12. **(3)** $a_{\text{rel}} = g - g = 0$

$\vec{v}_{rel}$ = constant

= 50 + 50 = 100 m/s

13. **(2)** Here, $\vec{M} = 50\hat{i}\ Am^2$, $\vec{B} = (0.5\hat{i} + 3.0\hat{j})\,T$

$\vec{\tau} = \vec{M} \times \vec{B} = (50\hat{i}) \times (0.5\hat{i} + 3.0\hat{j})$

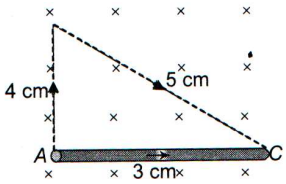
$\vec{\tau} = 150 \times \hat{i} \times \hat{j} = 150\hat{k}$ Nm

14. **(1)** Using $R_{T_2} = R_{T_1}[1 + \alpha(T_2 - T_1)]$

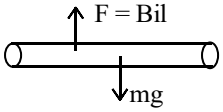
$\Rightarrow R_{100} = R_{50}[1+\alpha(100-50)]$

$\Rightarrow 7 = 5[1+(\alpha\times 50)] \Rightarrow \alpha = \frac{(7-5)}{250} = 0.008/°C$

15. **(3)** The given curved wire can be treated as a straight wire as shown.



Force acting on the wire AC,
F = BiI = 2 × 2× 3 × 10^{-2} = 12 × 10^{-2} N along *y*-axis.



F = 12 × 10^{-2} N.
mg = 10 × 10^{-3} × 10 = 10 × 10^{-2} N
F_{net} = F – mg
F_{net} = 2 × 10^{-2} N
ma = 2 × 10^{-2} $\Rightarrow 10^{-2}a = 2\times 10^{-2}$

a = 2 m/s^2

16. **(3)** Here, $V_0 = 10^{-6}$ m^3, $A = 2\times 10^{-7}$ m^2

$\Delta T = 100°C, \Delta L = ?, \gamma = 18\times 10^{-5}/°C$

Now,

$\Delta V = \gamma V(\Delta T) = 18\times 10^{-5}\times 10^{-6}\times 100 = 18\times 10^{-9} m^3$

As $\Delta V = A(\Delta L)$

$\therefore \Delta L = \frac{\Delta V}{A} = \frac{18\times 10^{-9}}{2\times 10^{-7}} = 9\times 10^{-2} m = 9cm.$

17. **(1)** $\lambda = \frac{c}{f} = \frac{3\times 10^8}{120\times 10^6} = 2.5m$

18. **(3)**

19. **(4)** When $b = 0$, scattering angle, $\theta = 180°$.

20. **(2)** Liberated energy
Q = 117 × 8.5 + 117 × 8.5 – 7.6 × 236 = 195.4 MeV.
Thus, in fission of one Uranium nuclei nearly 195 MeV energy is liberated.

21. **(4)** $\upsilon_1 = \frac{dy_1}{dt} = 2\times 10\cos(10t+\theta)$

$\upsilon_2 = -3\times 10\sin 10t = 30\cos(10t+\frac{\pi}{2})$

$\therefore$ Phase difference

$= (10t+\theta) - (10t+\frac{\pi}{2}) = \theta - \frac{\pi}{2}.$

22. **(2)** The velocity of transverse wave,

$v = \sqrt{\frac{T}{\mu}} \Rightarrow \frac{v_1}{v_2} = \sqrt{\frac{T_1}{T_2}} \Rightarrow \frac{v}{v}\times 2 = \sqrt{\frac{2.06\times 10^4}{T}}$

$\Rightarrow T = \frac{2.06\times 10^4}{4} = 0.515\times 10^4$ N

$\Rightarrow T = 5.15\times 10^3$ N

23. **(2)** Shift in fringe pattern $= \frac{\beta}{\lambda}(\mu-1)$ t

$= \frac{\lambda D/d}{\lambda}(\mu-1)t = \frac{D}{d}(\mu-1)t$

24. **(2)** F = BIL $\therefore$ Dimension of

$[B] = \frac{[F]}{[I][L]} = \frac{[MLT^{-2}]}{[I][L]} = [MT^{-2}I^{-1}]$

Now dimension of

$[P] = \frac{B^2l^2}{m} = \frac{[MT^{-2}I^{-1}]^2\times[L^2]}{[M]}$

$= [ML^2T^{-4}I^{-2}]$

25. **(3)** $f_1 = 3, f_2 = 5, n_1 = 3, n_2 = 2$

$f_{mixture} = \frac{n_1f_1 + n_2f_2}{n_1+n_2} = \frac{9+10}{f} = \frac{19}{5}$

$\gamma_{mixture} = 1 + \frac{2\times 5}{19} = \frac{29}{19} = 1.52.$

26. **(3)** As, current in loop *A* increases with time, the loop *B* opposes the increases in magnetic flux (due to increasing current in *A*). According to Lenz's law, induced current in B will be such that the loop B is repelled by the loop *A*.

27. **(2)**

28. **(4)** Process *iaf*: $\Delta Q = \Delta U + \Delta W$

$\Delta U = U_f - U_i = \Delta Q - \Delta W = 50 - 20 = 30J$

Process *f* to *i*:

$\Delta Q = \Delta U + \Delta W = U_i - U_f + \Delta W$

$= -30 - 13 = -43$ J.

29. **(1)** Viscous force $(F) = \eta A\times\frac{dv}{dx} \propto A$ (Where A is the area of the plates).
Hence, the correct answer is option (1)

30. **(2)** Here, $\Delta x = 3.75\mu m = 3.75\times 10^{-6} m$

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

Now $\frac{\Delta x}{\lambda}=\frac{3.75\times10^{-6}}{5\times10^{-7}}=\frac{37.5}{5}=7.5$

$\Delta x=7.5\lambda$

i.e. path difference is odd integral multiple of half the wavelength. Therefore, the point will be dark.

31. **(3)** $\because$ Least count is of three decimal places

So correct measurement will be 5.320 cm

32. **(3)** The capacitance of a parallel plate capacitor in the absence of the dielectric is

$C_0=\frac{\varepsilon_0 A}{d}$ ...(i)

where A is the area of each plate and d is the distance between them.

The capacitance of a parallel plate capacitor in the presence of dielectric slab of thickness t and dielectric constant K, is

$$C=\frac{\varepsilon_0 A}{(d-t)+\left(\frac{t}{K}\right)}=\frac{\varepsilon_0 A}{\left(d-\frac{3}{4}d\right)+\left(\frac{3d}{4K}\right)}$$

$$C=\frac{\varepsilon_0 A}{\frac{d}{4}+\frac{3d}{4K}}=\frac{4K\varepsilon_0 A}{d(K+3)} \quad ...(ii)$$

Divide (ii) by (i), we get

$$\frac{C}{C_0}=\frac{4K\varepsilon_0 A}{d(K+3)}\times\frac{d}{\varepsilon_0 A}=\frac{4K}{K+3}$$

33. **(2)** $\vec{F}_1+\vec{F}_2+\vec{F}_3+\vec{F}_4+\vec{F}_5=2(4\hat{i})$ ...(i)

and $\vec{F}_2+\vec{F}_3+\vec{F}_4+\vec{F}_5=2(7\hat{j})$ ...(ii)

From (i) and (ii), $\vec{F}_1=8\hat{i}-14\hat{j}$

$\vec{a}_1=\frac{\vec{F}_1}{m}=4\hat{i}-7\hat{j}\Rightarrow a_1=\sqrt{16+49}=\sqrt{65}$ m/s^2

34. **(1)** 35. **(2)**

SECTION - B (Attempt Any 10 Questions)

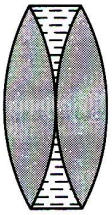
36. **(4)** $\frac{1}{f}=(1.5-1)\left(\frac{1}{R}+\frac{1}{R}\right)$

$\therefore\ R=f$

For the water len, $\frac{1}{f'}=\left(\frac{4}{3}-1\right)\left(-\frac{1}{R}-\frac{1}{R}\right)$

$$=\frac{1}{3}\left(-\frac{2}{f}\right)$$

or $\frac{1}{f'}=\frac{-2}{3f}$



Now using, $\frac{1}{F}=\frac{1}{f_1}+\frac{1}{f_2}+\frac{1}{f_3}$

we have, $\frac{1}{F}=\frac{1}{f}+\frac{1}{f}+\frac{1}{f}=\frac{2}{f}-\frac{2}{3f}=\frac{4}{3f}$

$\therefore F=\frac{3f}{4}$.

37. **(3)** When a particle is released from rest position under gravity, then $v=0$ but $a\neq0$.

Also, a body s momentarily at rest at the instant, if it reverse the direction.

Therefore, Statement I is true but Statement II is false.

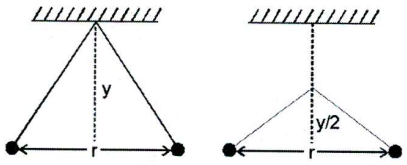
38. **(3)** Let v be the velocity with which the satellite strikes the surface of the earth. According to law of conservation of total mechanical energy, we get

$$-\frac{GMm}{R+h}=\frac{1}{2}mv^2-\frac{GMm}{R} \text{ or } v^2=\frac{2GM}{R}-\frac{2GM}{R+h}$$

$\because v_0=\sqrt{\frac{GM}{R+h}}$ and $v_e=\sqrt{\frac{2GM}{R}}$

$\therefore v=\sqrt{v_e^2-2v_0^2}$.

39. **(1)**

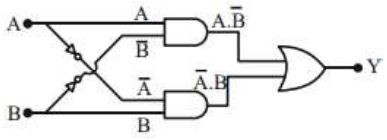


From figure, $\tan\theta=\frac{F_e}{mg}\Rightarrow\frac{r/2}{y}=\frac{\frac{kq^2}{r^2}}{mg}$

[$\because F=\frac{kq^2}{r^2}$ from coulomb's law]

$\Rightarrow r^3\propto y\Rightarrow r'^3\propto\frac{y}{2}\Rightarrow\frac{r'}{r}=\frac{1}{2^{1/3}}\Rightarrow r'=\frac{r}{\sqrt[3]{2}}$

40. **(2)**



$Y=A\cdot\bar{B}+\bar{A}\cdot B$

This is XOR GATE

41. **(3)** As force, F = mass × accen

$=m(-\omega^2 y)=-m\omega^2 y$

i.e., $F \propto y$ so $\frac{F_2}{F_1} = \frac{y_2}{y_1}$ or

$$F_2 = F_1 \times \frac{y_2}{y_1} = \frac{9 \times 6}{4} = 13.5N.$$

42. **(1)**

43. **(1)** According to de-Broglie theory, de-Broglie wave is given by $\lambda = \frac{h}{p} = \frac{h}{mv}$

$v = u + at$

$$v = v_0 - \frac{eE}{m}t$$

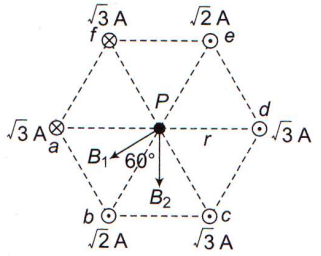
Hence, the correct answer is option (1).

44. **(4)** Here, the centre of mass of the system remains unchanged when the mass m moved a distance $L\cos\theta$, let the mass $(m+M)$ moves a distance x in the backward direction.

$$\therefore (M+m)x - mL\cos\theta = 0$$

$$\therefore x = \frac{mL\cos\theta}{M+m}.$$

45. **(2)** Magnetic field at P will be zero due to b and e. Field at P due to c and f.



$$B_1 = 2\left[\frac{\mu_0\sqrt{3}}{2\pi r}\right] = \frac{4\times10^{-7}\sqrt{3}}{3\times10^{-2}} = \frac{40}{\sqrt{3}}\mu T$$

Field at P due to a and d :

$$B_2 = 2\left[\frac{\mu_0\sqrt{3}}{2\pi r}\right] = \frac{40}{\sqrt{3}}\mu T$$

Net field at P :

$$B = \sqrt{B_1^2 + B_2^2 + 2B_1B_2\cos 60^0} = 40\mu T$$

46. **(2)**

Here, $n_1 = 500$, $L_1 = 125$ mH, $n_2 = 800$, $L_2 = ?$

$$\frac{L_2}{L_1} = \frac{n_2^2}{n_1^2} = \frac{(800)^2}{(500)^2} = \frac{64}{25}$$

$$\Rightarrow L_2 = \frac{64}{25}L_1 = \frac{64}{25}\times 125mH = 320mH.$$

47. **(2)** $W = \frac{2\pi}{T} = 100\pi \Rightarrow T = \frac{2}{100}s = 20$ ms

time for $\frac{A}{2}$ to A (like SHM)

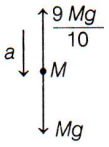
$$= \frac{T}{6} = 3.3\,\text{ms}$$

48. **(2)** By Newton's third law of motion,

Reaction by floor on mass M = $\frac{9Mg}{10}$ (Upward)

From figure,

F_{net} = on cabin of mass M



$$= \text{Mg} - \frac{9Mg}{10} = \frac{Mg}{10}\text{(downward)}$$

By second law, $\frac{Mg}{10} = Ma \Rightarrow a = \frac{g}{10}$

49. **(1)** $A_1 = 5, A_2 = 3$

$\Delta\phi = 2\pi(1.5) = 3\pi$

$$A_{net} = \sqrt{A_1^2 + A_2^2 + 2A_1A_2\cos(3\pi)}$$

$$= |A_1 - A_2| = 2 \text{ cm}$$

50. **(1)** $(n+1)$ divisions of vernier scale = n divisions of main scale

$$\therefore \text{ 1 vernier division} = \frac{n}{n+1} \text{ main scale division}$$

Least count = 1 M.S.D. – 1 V.S.D.

$$= \left(1 - \frac{n}{n+1}\right)M.S.D. = \left(\frac{1}{n+1}\right)M.S.D. = \frac{a}{n+1}$$

CHEMISTRY

SECTION - A (35 Questions)

51. **(4)**

In P_4O_{10}, there are four shorter P = O bonds and six longer P–O–P bonds.

52. **(3)**

Kr and Xe do form some chemical compounds.

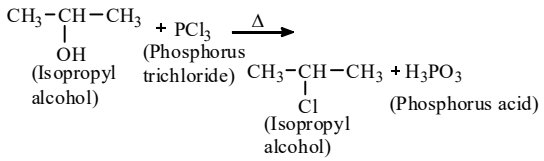
53. **(3)**

$$C(s) + \frac{3}{2}H_2(g) + \frac{1}{2}Cl_2(g) \longrightarrow CH_3Cl(g)$$

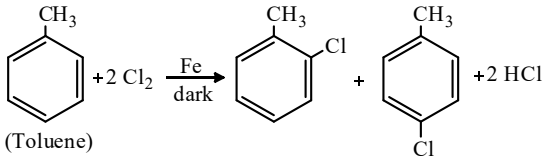
54. **(2)**

For O_3 to be stable, the reaction shouldn't be favourable in forward direction.

55. **(4)**



56. (1)



57. **(1)**

In π acid ligand back bonding also take place which in value filled orbitals of metal and vacant orbitals of ligand this is synergic effect.

58. **(4)**

$[CoCl(NH_3)_3(H_2O)_2]Cl_2$

59. **(3)**

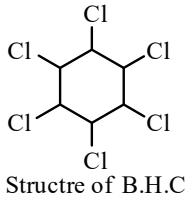
(P)-(2); (Q)-(1); (R)-(4); (S)-(3)

60. **(1)**

$\because$ Strength of acid $\propto \frac{1}{pK_a}$

$\therefore$ Formic acid will be strongest acid.

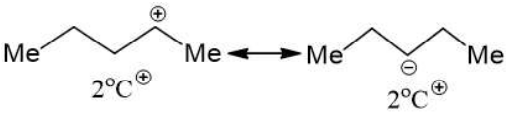
61. (2)



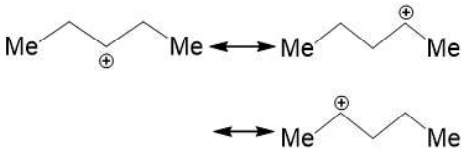
Structre of B.H.C.

62. **(1)**

Here, (1) is stable because it would not change to other stable carbocation. It can only change $2^{\circ}C^{\oplus}$ to $2^{\circ}C^{\oplus}$



On the other hand, (2) can change to two $2^{\circ}C^{\oplus}$ structures



Furthermore, (3) is stabilized by 1, 2-Me shift and (4) is stabilized by 1, 2-$H^{\oplus}$ shift.

63. **(1)**

$Co^{3+} = [Ar]3d^6$, unpaired $e^-(n) = 4$

Spin magnetic moment

$$(\mu) = \sqrt{4(4+2)} = \sqrt{24}\text{B.M.}$$

$Cr^{3+} = [Ar]3d^3$, unpaired $e^-(n) = 3$

Spin magnetic moment

$$(\mu) = \sqrt{3(3+2)} = \sqrt{15}\text{B.M.}$$

$Fe^{3+} = [Ar]3d^5$, unpaired $e^-(n) = 5$

Spin magnetic moment

$$(\mu) = \sqrt{5(5+2)} = \sqrt{35}\text{B.M.}$$

$Ni^{2+} = [Ar]3d^8$, unpaired $e^-(n) = 2$

Spin magnetic moment

$$(\mu) = \sqrt{2(2+2)} = \sqrt{8}\text{B.M.}$$

64. **(2)**

+3

65. **(1)**

In osmosis, solvent molecules move from lower concentration (higher vapour pressure) to higher concentration (lower vapour pressure)

66. **(4)**

Anode : $2Cl^-(aq) \longrightarrow Cl_2(g) + 2e^-$

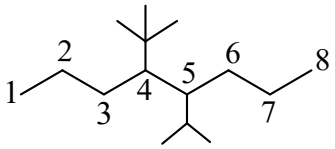
Cathode: $2H_2O + 2e^- \longrightarrow H_2(g) + 2OH^-(aq)$

Net reaction

$2Na^+(aq) + 2Cl^-(aq) + 2H_2O(l) \longrightarrow$

$Cl_2(g) + H_2(g) + 2OH^-(aq) + 2Na^+(aq)$

67. **(3)**



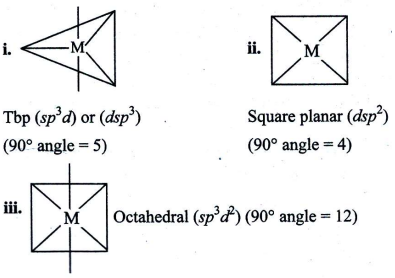
68. **(2)**

Same functional group but different chain around functional group.

69. **(1)**

H_2S has a bent shape and hence has a finite dipole moment while all other molecuels have zero dipole moment.

70. **(4)**



71. **(3)**

$$\text{Anode: } 2Ag(s) \rightleftharpoons 2Ag^{+}(aq) + 2e^{-}$$
$$\text{Cathode: } Cu^{2+}(aq) + 2e^{-} \rightleftharpoons Cu(s)$$
$$\text{Net reaction: } 2Ag(s) + Cu^{2+}(aq) \rightleftharpoons 2Ag^{+}(aq) + Cu(s)$$

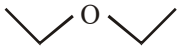
72. **(2)**
Lower the activation energy, easier/faster will be the reaction.

73. **(3)**

$$CH_3CH_2CH_2OH \xrightarrow{K_2Cr_2O_7, H^+} CH_3CH_2COOH$$
n-propyl alcohol — propanoic acid

$$CH_3CHOHCH_3 \xrightarrow{K_2Cr_2O_7, H^+} CH_3COCH_3$$
isopropyl alcohol — Acetone

74. **(2)**



75. **(2)**
Isoelectronic with three bond order

76. **(3)**

$$\text{Moles of } Mg^{2+} = \frac{48}{24} = 2 \text{ mole}$$

Number of electrons = $2 \times 10\ N_A = 20\ N_A$

77. **(4)**

$$V \propto \frac{Z}{n}$$

78. **(4)**
– COOH

79. **(1)**
All carbonyl compounds produce orange precipitate with 2, 4-Dinitrophenyl hydrozine.

80. **(1)**
The more the negative charge, the larger the size of anion.
Moreover along the period ($\rightarrow$) size of atom decreases.

$\therefore$ Size of $O^{\ominus} > F^{\ominus}$

Size of atom is less than its anion. Hence the order is $O^{2-} > O^{\ominus} > F^{\ominus} > F$

81. **(2)**
Factual statement

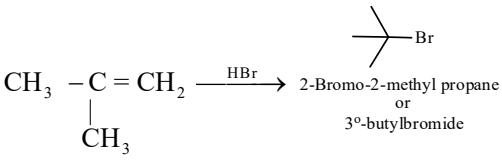
82. **(2)**
K L M N..... > energy increases.

83. **(3)**
Radial node $(n - l - 1) = 2$

$l = 0,\ n = 3$

84. **(1)**
$CH_3COOH,\ C_2H_5OH$

85. **(4)**



SECTION - B (Attempt Any 10 Questions)

86. **(3)**
$CHCl_3$ is stored in dark bottles to prevent oxidation of $CHCl_3$ in presence of sunlight.

87. **(3)**

$$CH_3CH_2CH{=}CH_2 \xrightarrow{HBr} CH_3CH_2CH_2CH_2Br$$
But-1-ene (X) — (Y)

$$CH_3CH_2CH_2CH_2Br \xrightarrow[\text{Acetone}]{NaI} CH_3CH_2CH_2CH_2I$$

88. **(1)**
On ionisation it gives maximum number of (four) ions.

89. **(1)**
$\because\ (T_b)_{Solvent} < (T_b)_{Solution}$;

$\therefore\ \Delta S_{Solv} > \Delta S_{Solution}$

$(\Delta H_{Solution}) = (\Delta H)_{Solvent}$

[Only solvent participate in vaporisation]

$(T_b)_{Solvent} < (T_b)_{Solution}$

[Due to elevation in BP of solution]

90. **(1)**
Assertion is correct, reason is correct; reason is a correct explanation for assertion.

91. **(1)**
(1) For zero order reaction $t_{1/2} \propto A_0$

(2) For zero order $A_0 - A_t = kt$

or $2t_{1/2} = t_{completion}$

(3) For 1st order reaction $t_{1/2} = \frac{0.693}{k}$

(4) Rate law expression can contain reactants, products or catalysts but not intermediates.

92. **(3)**
Hofmann's bromamide reaction is used to convert amide to amine.

$$RCONH_2 + Br + 4KOH$$
$$\longrightarrow \underset{\text{amide}}{RNH_2} + K_2CO_3 + 2KBr + \underset{\text{amine}}{2H_2O}$$

93. **(2)**

$$\overset{+3}{H_2C_2O_4}.2H_2O \longrightarrow \overset{+4}{CO_2}$$

$n_f = 2$

$$E = \frac{126}{2} = 63$$

$$HNO_3 (n_f = 1) \quad E = \frac{63}{1} = 63$$

94. **(2)**
For $3d_{xy}$ orbital:
Number of nodal plane = $\ell = 2$ (xz & yz plane)
Number of radial nodes = $n - \ell - 1 = 3 - 2 - 1 = 0$

95. **(3)**
In this reaction
[A] = $CH_3CH_2CH_2CH_2O^-MgBr^+$
[B] = $CH_3CH_2CH_2CH_2OH$
[C] = $CH_3CH_2CH_2COOH$

96. **(1)**
(i)-(c), (ii)-(e), (iii)-(a), (iv)-(b), (v)-(d)

97. **(3)**
A is true but R is false

98. **(3)**
A red coloured ppt. is obtained

99. **(3)**

$$\text{Work} = \text{area enclosed} = \frac{1}{2}(5P_1 \times 2V_1) = 5P_1V_1$$

100. **(2)**

$$Q_C = \frac{[SO_3(g)]^2}{[SO_2(g)]^2[O_2(g)]^1} = 1000 > k_c$$

i.e., reaction moves backward.

BOTANY

Section - A (35 Questions)

101. **(3)** (NCERT XII, Pg 114, based on translation)
102. **(3)** (NCERT XII, Pg 77, Based on Para 2nd)
103. **(1)** (NCERT XI; Page No. 67; Sub-topic 5.1.2)
104. **(2)** (11th NCERT para8.4.2, 8.5.6/ Page no.129,136)
105. **(2)** (NCERT XII, Pg 99, Figure 6.4a)
106. **(1)** (NCERT 11th, Page no-10, Paragraph-1.3.5, Line no- 1)
107. **(3)** (11th NCERT para 8.5.10 based conceptual / Page no.138)
108. **(2)** (11th NCERT para10.1.1 based / Page no.163)
109. **(2)** [NCERT class XI, Page no. 88, Subpoint 6.2]
110. **(4)** [NCERT class XI, Page 246, (First paragraph)]
111. **(3)** (NCERT XI Page No. 236, 14.7 last Paragraph, 1st line)
112. **(3)** (11th NCERT Page no.37 to 38)
113. **(4)** (11th NCERT Page no.32 to 33)
114. **(4)** (11th NCERT Page no.31 Fig.3.1(b)
115. **(1)** (NCERT 11th, Page no- 27, Paragraph- 1st , Line no- 2,3 and 4)
116. **(2)** (NCERT 11th, Page no- 21, 2nd paragraph, line no- 3)
117. **(1)** (NCERT 12th, Page no- 35, Paragraph-2.4.2, Line no- 1,2)
118. **(4)** (NCERT XII, Pg 108, Para 1, Line 7)
119. **(3)** (NCERT XI page no. 212, sub-topic 13.6.1 – 3rd and 4th line)
120. **(3)** (NCERT XII, Pg 121, Based on DNA FINGER PRINTING)
121. **(4)** (NCERT XI-page no. 219 last line and first two lines of page no. 220)
122. **(4)** (NCERT 12th, Page no- 27, Paragraph-2.2.3, Line no- 3,4)
123. **(2)** (NCERT 12th, Page no- 27, Paragraph- 2nd, Line no- 6,7)
124. **(2)** (12th NCERT Page no.248, conceptual.)
125. **(3)** (NCERT XII, Pg 90 (Sickle-cell anaemia), Pg 113 (Mutations and Genetic Code))
126. **(2)** [NCERT Class XI, Page no. 91, Starting paragraph]
127. **(3)** (NCERT XI ; Page No.78; Sub-topic 5.8)
128. **(2)** (NCERT XII, Pg 106, Para 4, Line 9)
129. **(3)** (NCERT XII, Pg 106, Para 5, Line 6)
130. **(4)** (NCERT XI; Added family Malvaceae)
131. **(1)** (NCERT XII, Pg 75, Law of Segregation)
132. **(2)** (NCERT XII, Pg 78, Based on 2nd para concept)
133. **(2)** (NCERT XII, Pg 88, based on Mutation and Law of dominance)
134. **(1)** (11th NCERT para 10.4.1 based / Page no.168)
135. **(4)** (NCERT 11th, Page no- 23, Paragraph-2.3.1, Line no- 6 and 7)

SECTION - B (Attempt Any 10 Questions)

136. **(1)** [NCERT class XI, Page 250, point 15.4.3.4]
137. **(2)** (NCERT XI Pg.230, 1st Para, 1st line)
138. **(4)** (11th NCERT para 8.4.1 / Page no. 129)
139. **(3)** (NCERT 12th, Page no- 26 and 27, Concept based)
140. **(2)** (NCERT 11th, Page no-23, Paragraph- 2nd, Line no-11-15)
141. **(4)** [NCERT class XI, Page 248, 24, 9point 15.4.3.1]
142. **(1)** (NCERT XI Pg.233; 2nd Paragraph, last 4th line)
143. **(3)** (11th NCERT para10.4.1 based / Page no.168)
144. **(4)** (11th PK NCERT Page no 35 TO 39, CONCEPTUAL)
145. **(4)** (12th NCERT Page no.248 fig.14.4(b), concept)
146. **(2)** (NCERT XII, Pg 75, based on test cross)
147. **(2)** (NCERT 11th, Page no-8, Paragraph-1st, Line no-16-19)
148. **(2)** (11th NCERT para 10 introduction based/ Page no.162)
149. **(3)** (NCERT XI – conceptual – page no. 218, 1st paragraph)
150. **(3)** (NCERT XI; Page No. 80; Sub-topic 5.9.2)

ZOOLOGY

Section - A (35 Questions)

151. **(2)** (NCERT 12th, p.no. 60, para2)
152. **(3)** (NCERT 12th, p.no. 44, para4,45-para1)
153. **(2)** (NCERT Pg. No. 154-155)
154. **(3)** (NCERT Page No. 145)
155. **(1)** (NCERT Conceptual Page No. 340, 4th line of 2nd paragraph)
156. **(3)** (NCERT 12th, p.no. 64, para 2,line 8)
157. **(1)** (NCERT 12th, p.no. 62, para 5, line 2)
158. **(1)** [NCERT P.No.212, 3rd para]
159. **(2)** (NCERT 11th, Page no- 157, Paragraph- 1st, Line no- 1-4)
160. **(3)** (Page No. 337, last Paragraph)
161. **(1)** (Page No. 53; Phylum arthropoda)
162. **(4)** [NCERT P.No.312, Synovial Joint]
163. **(4)** (NCERT Pg.199, 3 points)
164. **(1)** (NCERT 12th, p.no. 43, para3, line2)
165. **(2)** (12th NCERT 10.1 BIOTECHNOLOGICAL APPLICATIONS IN AGRICULTURE)
166. **(1)** [NCERT P.No.304, Last Para]
167. **(3)** (NCERT Page No. 274)
168. **(4)** (NCERT Page No. 130-133)
169. **(1)** [NCERT P.No.208, GOM Points: 5th point]
170. **(3)** (12th NCERT para10.2.3 / Page no.183)
171. **(1)** (NEET-2019/NCERT Page - 284)
172. **(1)** (NEET-2014/NCERT Page - 280)
173. **(3)** (NCERT 12th, Page no- 129, 1st Paragraph, Line no- 1-4)
174. **(4)** (NCERT 12th, Page no- 133, 1st Paragraph, Line no- 10,11)
175. **(2)** (NCERT-12th, Page no- 133, 1st paragraph concept based)
176. **(2)** (NCERT 11th, Page no- 151, Paragraph- 9.8 , Line no- 4-6)
177. **(4)** (12th NCERT Page no 231)
178. **(4)** (12th NCERT Page no.266 to 267)
179. **(4)** (12th NCERT Page no.261 1st para)
180. **(3)** (NCERT 11th p.no 111, fig.7.14)
181. **(3)** (Page No. 292 1st line)
182. **(4)** (Page No. 298, last two lines of 1st paragraph)
183. **(2)** [NCERT P.No.311, 2nd para 8th Line]
184. **(1)** [NCERT P.No.321, Line 9th to 12th]
185. **(2)** [NCERT P.No.321, Forebrain Last 4 Lines]

SECTION - B (Attempt Any 10 Questions)

186. **(3)** (NCERT Page No. 143)
187. **(3)** (NCERT 11th p.no 118, para 1, line5)
188. **(3)** (NCERT 12th, p.no. 46, para3, line7)
189. **(2)** (12th NCERT para10 .3/ Page no.183)
190. **(2)** (NCERT Pg. No. 190)
191. **(2)** (NCERT 11th, Page no- 148, Paragraph- 9.5)
192. **(2)** (NCERT 12th , Page no 137, 2nd paragraph, Line no 10 and 11)
193. **(3)** (12th NCERT Page no.230 fig.13.5)
194. **(3)** [NCERT P.No.312, Synovial Fluid]
195. **(3)** (NCERT 11th p.no 101, 120)
196. **(2)** (Page No. 51; Phylum - platy helminthes)
197. **(4)** [NCERT P.No.193, 3rd para]
198. **(4)** (Page No. 337, 2nd line and 1st line of 3rd paragraph)
199. **(2)** [NCERT P.No. 316, first 2 lines & P.No.318, Para Below Diagram]
200. **(1)** (NEET-2018/NCERT Page - 149)