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

PHYSICS

SECTION - A (35 Questions)

01. **(3)** ∵ Least count is of three decimal places
So correct measurement will be 5.320 cm

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

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

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

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

03. **(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), $\vec{F}_1 = 8\hat{i}-14\hat{j}$

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

04. **(1)**

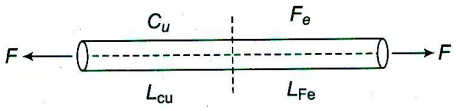
05. **(2)**

06. **(1)** Work done W = $\vec{F}\times\vec{s}$
Here, displacement in the direction of force is R, so
Work done = FR

07. **(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.

08. **(4)**

09. **(2)**



Stress is same $\sigma = F/A$

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

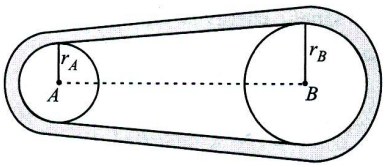
10 **(1)**

11. **(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.

12. **(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

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

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

14. **(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 $\frac{J_1}{J_2} = \frac{r_2^2}{r_1^2} = 9:1$

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

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

$\Delta PE_g = \Delta PE_s$

$Mgx = \left(\frac{1}{2}k_1x^2 + \frac{1}{2}k_2x^2\right) - 0$

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

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

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

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

= 50 + 50 = 100 m/s

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

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

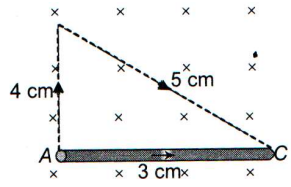
$\vec{\tau} = 150 \times \hat{i} \times \hat{j} = 150\hat{k}$ Nm

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

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

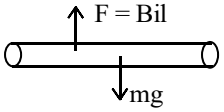
$\Rightarrow 7 = 5[1 + (\alpha \times 50)] \Rightarrow \alpha = \frac{(7-5)}{250} = 0.008/°C$

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



Force acting on the wire AC,

F = BiL = 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

$F_{net} = F - mg$

$F_{net} = 2 \times 10^{-2}$ N

$ma = 2 \times 10^{-2} \Rightarrow 10^{-2}a = 2 \times 10^{-2}$

$a = 2$ m/s^2

21. **(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 $\Delta V = A(\Delta L)$

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

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

23. **(3)**

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

25. **(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.

26. **(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

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

27. **(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

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

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

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

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

Now dimension of

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

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

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

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

$$\gamma_{mixture}=1+\frac{2\times5}{19}=\frac{29}{19}=1.52.$$

31. **(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.

32. **(2)**

33. **(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.

34. **(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)

35. **(2)** Here, $\Delta x=3.75\mu m=3.75\times10^{-6}m$

$$\lambda=5000\mathring{A}=5\times10^{-7}m$$

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.

SECTION - B (Attempt Any 10 Questions)

36. **(2)** Here, n_1 = 500, L_1 = 125 mH, n_2 = 800, L_2 = ?

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

$$\Rightarrow L_2=\frac{64}{25}L_1=\frac{64}{25}\times125mH=320mH.$$

37. **(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)

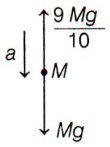
$$=\frac{T}{6}=3.3\,\text{ms}$$

38. **(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, $\frac{Mg}{10}=Ma\Rightarrow a=\frac{g}{10}$

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

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

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

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

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

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

Least count = 1 M.S.D. – 1 V.S.D.

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

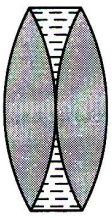
41. **(4)** $\frac{1}{f}=(1.5-1)\left(\frac{1}{R}+\frac{1}{R}\right)$

$$\therefore\ R=f$$

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

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

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

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.

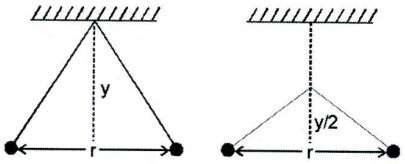
43. **(3)** Let v be the velocity with which the satellite strikes the surface of the earth. According to law of conservation of total mechanical energy, we get

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

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

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

44. **(1)**

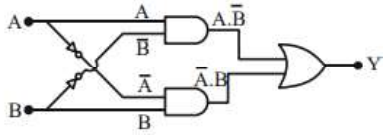


From figure, $\tan\theta = \frac{F_e}{mg} \Rightarrow \frac{r/2}{y} = \frac{kq^2}{\frac{r^2}{mg}}$

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

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

45. **(2)**



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

This is XOR GATE

46. **(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

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

47. **(1)**

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

$v = u + at$

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

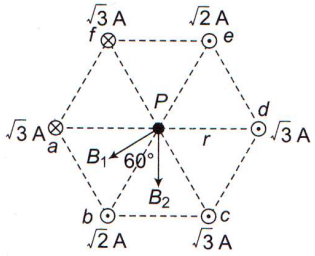
Hence, the correct answer is option (1).

49. **(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.

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

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

50. **(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 :

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

CHEMISTRY

SECTION - A (35 Questions)

51. **(2)**

Factual statement

52. **(2)**

K L M N..... > energy increases.

53. **(3)**

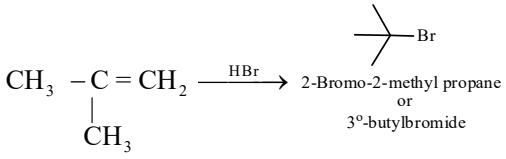
Radial node $(n - l - 1) = 2$

$l = 0,\ n = 3$

54. **(1)**

CH_3COOH, C_2H_5OH

55. **(4)**



56. **(4)**

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

57. **(3)**

Kr and Xe do form some chemical compounds.

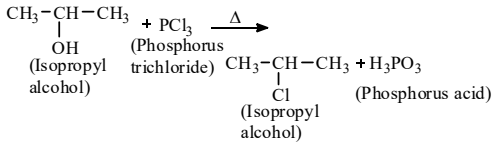
58. **(3)**

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

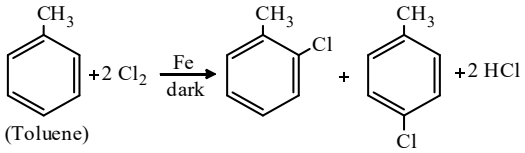
59. **(2)**

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

60. **(4)**



61. (1)



62. **(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.

63. **(4)**

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

64. **(3)**

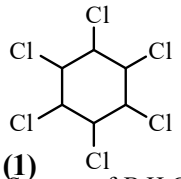
(P)-(2); (Q)-(1); (R)-(4); (S)-(3)

65. **(1)**

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

$\therefore$ Formic acid will be strongest acid.

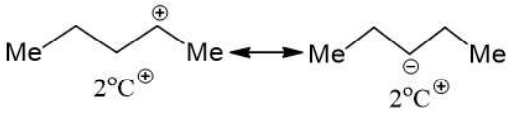
66. (2)



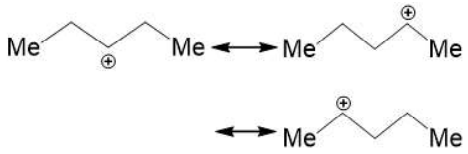
67. **(1)**

Structre of B.H.C.

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



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



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

68. **(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

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

69. **(2)**

+3

70. **(1)**

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

71. **(4)**

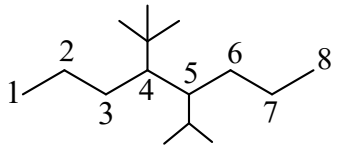
$$\text{Anode}: 2Cl^-(aq)\longrightarrow Cl_2(g)+2e^-$$

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

Net reaction

$$2Na^+(aq)+2Cl^-(aq)+2H_2O(l)\longrightarrow Cl_2(g)+H_2(g)+2OH^-(aq)+2Na^+(aq)$$

72. **(3)**



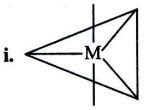
73. **(2)**

Same functional group but different chain around functional group.

74. **(1)**

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

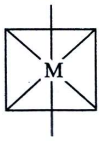
75. **(4)**

i. 

Tbp (sp^3d) or (dsp^3)
(90° angle = 5)

ii. 

Square planar (dsp^2)
(90° angle = 4)

iii. 

Octahedral (sp^3d^2) (90° angle = 12)

76. **(3)**

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

77. **(2)**

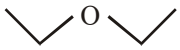
Lower the activation energy, easier/faster will be the reaction.

78. **(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

79. **(2)**



80. **(2)**

Isoelectronic with three bond order

81. **(3)**

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

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

82. **(4)**

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

83. **(4)**

– COOH

84. **(1)**

All carbonyl compounds produce orange precipitate with 2, 4-Dinitrophenyl hydrozine.

85. **(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 $O^{2-} > O^{\ominus} > F^{\ominus} > F$

SECTION - B (Attempt Any 10 Questions)

86. **(1)**

(i)-(c), (ii)-(e), (iii)-(a), (iv)-(b), (v)-(d)

87. **(3)**

A is true but R is false

88. **(3)**

A red coloured ppt. is obtained

89. **(3)**

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

90. **(2)**

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

i.e., reaction moves backward.

91. **(3)**

$CHCl_3$ is stored in dark bottles to prevent oxidation of $CHCl_3$ in presence of sunlight.

92. **(3)**

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

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

93. **(1)**

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

94. **(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]

95. **(1)**

Assertion is correct, reason is correct; reason is a correct explanation for assertion.

96. **(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.

97. **(3)**
Hofmann's bromamide reaction is used to convert amide to amine.

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

98. **(2)**

$$H_2\overset{+3}{C_2}O_4.2H_2O \longrightarrow \overset{+4}{C}O_2$$

$n_f = 2$

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

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

99. **(2)**
For $3d_{xy}$ orbital:
Number of nodal plane = $\ell = 2$ (xz & yz plane)
Number of radial nodes = $n - \ell - 1 = 3 - 2 - 1 = 0$

100. **(3)**
In this reaction
[A] = $CH_3CH_2CH_2CH_2O^-MgBr^+$
[B] = $CH_3CH_2CH_2CH_2OH$
[C] = $CH_3CH_2CH_2COOH$

BOTANY

Section - A (35 Questions)

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

SECTION - B (Attempt Any 10 Questions)

136. **(2)** (NCERT XII, Pg 75, based on test cross)
137. **(2)** (NCERT 11th, Page no-8, Paragraph-1st, Line no-16-19)
138. **(2)** (11th NCERT para 10 introduction based/ Page no.162)

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

ZOOLOGY

Section - A (35 Questions)

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

SECTION - B (Attempt Any 10 Questions)

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