P ANSWER KEY & SOLUTION KEY FINAL ROUND - 07 (PCB) Dt.15.04.2024

CHEMISTRY

SECTION - A (35 Questions)

01. **(1)** $2Mg + O_2 \longrightarrow 2MgO$

Initial $n=\frac{1}{2}$ $n=1$

$2Mg + O_2 \longrightarrow 2MgO$

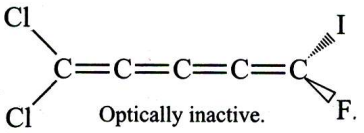
Final $n=0$ $n=\frac{3}{4}$ $n=\frac{1}{2}$

02. **(3)** Earlier rate $= kA^n B^m$

New rate $= k(2A)^n \left(\frac{1}{2}B\right)^m$

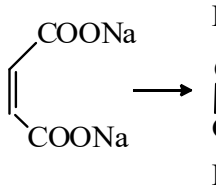
$$\frac{\text{New rate}}{\text{Earlier rate}} = \frac{2^n A^n B^m 2^{-m}}{A^n B^m} = 2^n.2^{-m} = 2^{n-m}$$

03. **(3)**



Optically inactive.

04. **(3)**



$+ 2CO_2 + 2NaOH + H_2$

Acetylene + CO_2 is formed at anode

05. **(2)** $(NH_4)_2Cr_2O_7 \xrightarrow{\Delta} N_2 + Cr_2O_3 + 4H_2O$

$NH_4NO_2 \xrightarrow{\Delta} N_2 + 2H_2O$

06. **(2)** Because yellow phosphorus is most reactive form phosphorus and red P is highly polymerised.

07. **(2)** Minus signs are for reactants and positive signs for products. Dividing numbers are the coefficients.

08. **(4)** Molar conductivity of an electrolyte A_mB_n is $m\lambda^{\infty}_{(A^{n\oplus})} + n\lambda^{\infty}_{(B^{m-})}$

09. **(3)** The conversion of –CN to $-CH_2NH_2$ by catalytic reduction is called Mendius reaction.

10. **(3)** $CH_3 - \underset{CH_3}{\overset{4}{CH}} - \overset{3}{CH_2} - \underset{1}{\overset{2}{CH}}(CN) - CH_3$

2, 4-dimethyl pentane nitrile

11. **(1)** $2CrO_4^{2-} + 2H^+ \rightarrow Cr_2O_7^{2-} + H_2O$

$Cr_2O_7^{2-} + 2OH^- \rightarrow 2CrO_4^{2-} + H_2O$

12. **(1)** 0.85 Å

13. **(4)** The azeotropic mixture cannot be separated into individual components as both the components boil at the same temperature.

14. **(2)** At equilibrium, rate of forward reaction is equal to the rate of backward reaction. As the equilibrium is dynamic, reaction will not stop ($r_f \neq 0$ and $r_b \neq 0$)

15. **(2)** Cis addition occurs and molecule becomes Achiral

16. **(4)** A-iii, B-i, C-ii, D-iv

17. **(3)** As the size of anion decreases, the polarisability decreases (small cation, large anion, high charge, more covalent or more polarisability) (Fajans' rule).

18. **(1)** Apply Fajan's rule, charge on the cation is same and the anion is common in all the compounds, so the size of cation will decide the ionic character or the ionic character down group 2, increases. So, the order is as given in (1).

19. **(1)** $(1)[Ag^+] = \frac{K_{sp}}{[Br^-]} = 5\times10^{-12}\,M$

$(2)[Ag^+] = \frac{K_{sp}}{[Cl^-]} = 1.8\times10^{-7}\,M$

$(3)[Ag^+] = \sqrt{\frac{K_{sp}}{[CO_3^{2-}]}} = 9\times10^{-6}\,M$

$(4)[Ag^+] = \left(\frac{K_{sp}}{[ASO_4^{3-}]}\right)^{1/3} = 10^{-7}\,M$

20. **(2)** In adiabatic process, there is no heat transfer between system and surrounding.

21. **(4)** If both assertion and reason are false.

22. **(3)** Electron deficient group decreases the electron density of N-atom, thus, makes its lone pair less available for donation.

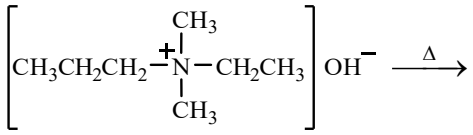
23. **(3)** Triamminebromochloronitroplatinum (IV) chloride

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

25. **(3)** An extensive property is a property whose value depends on the quantity or size of matter present in the system. For example, mass, volume, internal energy, enthalpy, heat capacity, etc. are extensive properties.

26. **(4)** $CaCO_3$ is a salt with n-factor = 2

27. **(3)** In Hofmann elimination reaction, less substitudes alkene is the main product.



$$CH_3CH_2CH_2{-}N(CH_3)_2 + CH_3CH{=}CH_2 + CH_2{=}CH_2$$

(minor) (major)

28. **(1)** The genetic information of cell is contained in the sequence of base A, T, G and C in DNA molecule. When a cell divides, DNA molecules replicate and make exact copies of themselves so that each daughter cell will have DNA indentical to that of the parent cell.

29. **(4)** Bohr's atomic theory is applicable to hydrogen and single electron species like He^+, Li^{2+}, Be^{3+}, etc.

30. **(4)** For g orbital, maximum value of l is 4.

Since $l = n - 1$, n should be 5.

31. **(1)** D > B > A > C

32. **(3)** Statement-1 is false, Statement-2 is true

33. **(4)** This is an intramolecular Cannizzaro reaction. On acidification, it gives a product containing an alcohols and a free acid group.

34. **(3)** Phthalic acid

35. **(3)** (a)-(ii); (b)-(iv); (c)-(iii); (d)-(i)

SECTION - B (Attempt Any 10 Questions)

36. **(2)** $BiO_3^- + 6H^+ + 2e^- \longrightarrow Bi^{3+} + 3H_2O$,

37. **(3)** 2

38. **(3)** The correct statement is : Hydrogen bond is stronger than the van der Waals forces.

39. **(3)** $\mu = \sqrt{n(n+2)}$

$3.87 = \sqrt{n(n+2)}$

$n = 3$

In $Cr^{3+} \rightarrow (Ar)3d^3$

$n = 3$

40. **(3)** Statement-1 is false, Statement-2 is true

41. **(1)** $MgSO_4 + NH_4OH + Na_2HPO_4 \longrightarrow Mg(NH_4)PO_4 + Na_2SO_4 + H_2O$

(white ppt.)

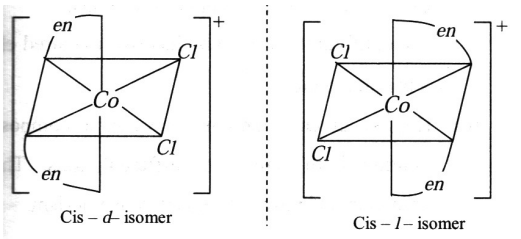
42. **(2)** $2N_2O_4 \rightleftharpoons 4NO_2$

$$\text{Rate} = -\frac{1}{2}\frac{d[N_2O_4]}{dt} = +\frac{1}{4}\frac{d[NO_2]}{dt}$$

43. **(1)** The treatment with $FeCl_3$ yield ferric ferrocyanide which has bulish green or prussian blue colouration

$$3Na_4[Fe(CN)_6] + 4FeCl_3 \rightarrow Fe_4[Fe(CN)_6]_3$$

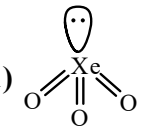
44. **(3)** $[Co(en)_2Cl_2]^+$



45. **(4)**

$5S + 5O_2 \rightarrow 5SO_2; 5O_2 \equiv 5SO_2; 5 \times 64 = 320gm.$

46. **(1)** (i)-(c), (ii)-(d), (iii)-(b), (iv)-(a)

47. **(1)**  It has three π and σ bonds.

48. **(2)** In first reaction, O_2 is LR

In second reaction, N_2 is LR

In third reaction, Cl_2 is LR

In fourth reaction, C is LR

49. **(4)** (1) $C_6H_5CONH_2 \xrightarrow[\text{ether}]{LiAlH_4} C_6H_5CH_2NH_2$

Benzylamine

(2) $C_6H_5CH_2CONH_2 + Br_2 + KOH \rightarrow C_6H_5CH_2NH_2$

Benzylamine

(3) $C_6H_5CN \xrightarrow{LiAlH_4} C_6H_5CH_2NH_2$

Benzylamine

(4) $C_6H_5CH_2NC \xrightarrow{LiAlH_4} C_6H_5CH_2NHCH_3$

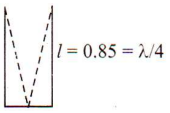
50. **(1)** Moles of $CaCO_3$ = Moles of CaO $\times \frac{100}{60}$

PHYSICS

SECTION - A (35 Questions)

51. **(1)** In fundamental mode

$\frac{\lambda}{4} = 0.85$



$\lambda = 4 \times 0.85$

$f = \frac{v}{\lambda} = \frac{340}{4 \times 0.85} = 100 \text{ Hz}$

$\therefore$ Possible frequencies = 100 Hz, 300 Hz

52. **(2)**

53. **(2)** As the measured length is 3.50 cm, the instrument must have a least count of 0.01 cm or 0.1 mm.

For the vernier callipers, 1 MSD = 1 mm

10 VSD = 9 MSD

$\Rightarrow$ 1 VSD = $\frac{9}{10}$MSD = $\frac{9}{10}$mm

Least count = 1 MSD – 1 VSD

$= \left(1 - \frac{9}{10}\right)\text{mm} = \frac{1}{10}$ mm = 0.1 mm

54. **(1)** Rocket propulsion is based on the principle of Newton's third law, that is every action has equal and opposite reaction.

Hence, the correct answer is option (1).

55. **(2)**

56. **(2)** According to question, 7th coin is under the weight of 5 coins above it.

Hence, reaction of the 7th coin on the 8th coin

= force on the 7th coin due to 8th coin

= weight of 5 coins

= 5 mg = 5 × 20 × 10^{-3} × 10 = 1N

[$\because m$ = 20g = 20 × 10^{-3} kg]

57. **(4)** $K.E. = hf - \phi$

$\tan\theta = h.$

58. **(2)** Applying energy conservation between A & B

$\frac{1}{2}mV_L^2 = \frac{1}{2}mV_H^2 + mg(2L)$

$\because V_L = \sqrt{5gL}$

so, $V_H = \sqrt{gL}$

$\frac{(K.E.)_A}{(K.E.)_B} = \frac{\frac{1}{2}m\left(\sqrt{5gL}\right)^2}{\frac{1}{2}m\left(\sqrt{gL}\right)^2} = \frac{5}{1}$

59. **(2)** S_1 in first $(p-1)$ sec

S_2 in first p sec

$S_1 = \frac{1}{2}a(p-1)^2$

$S_2 = \frac{1}{2}a(p)^2$

$S_1 + S_2 = \frac{1}{2}at^2$

$(p-1)^2 + p^2 = t^2$

$t = \sqrt{2p^2 + 1 - 2p}$

60. **(3)** Here, N = 2000 A = 0.2 m^2.

ω = 400 s^{-1}, B = 0.5 T, e_0 = ?

$e_0 = NAB\omega = 2000 \times 0.2 \times 0.5 \times 400 = 80000V$

$= 80kV.$

61. **(2)** $|\vec{p}_1| = |\vec{p}_2|$

$KE = \frac{p^2}{2M}$; p same $\qquad KE \propto \frac{1}{m}$

$\frac{KE_1}{KE_2} = \frac{p^2/2M_1}{p^2/2M_2} = \frac{M_2}{M_1}$

62. **(2)** Density $(d) = \frac{\text{Mass}}{\text{Volume}} = \frac{M}{L^3}$

So $\frac{\Delta d}{d} = \frac{\Delta M}{M} + \frac{3\Delta L}{L}$

Max percentage error =

$\left(\frac{\Delta d}{d} \times 100\right)\% = \left(\frac{\Delta M}{M} + \frac{3\Delta L}{L}\right) \times 100\%$

$= (2 + (3 \times 1)\% = 5\%$

63. **(2)** In ductile materials yield point exist whereas in brittle materials, failure would occur without yielding.

64. **(1)** $\frac{q_1}{q_2} = \frac{r_1^2}{r_2^2}$ [Let r_1 and r_2 be two different radii]

so, $\frac{E_1}{E_2}=\frac{q_1}{4\pi\varepsilon_0 r_1^2}\cdot\frac{4\pi\varepsilon_0 r_2^2}{q_2}\Rightarrow\frac{q_1}{q_2}\times\frac{r_2^2}{r_1^2}=1$

65. **(1)** Given, $a=2t+5$

$\Rightarrow\frac{dv}{dt}=2t+5\Rightarrow dv=(2t+5)dt$

...(i)

$\int_0^v dv=\int_0^5(2t+5)dt\Rightarrow v=\left[\frac{2t^2}{2}+5t\right]_0^5$

$=[5\times5+5\times5]=50\ \text{ms}^{-1}$

66. **(1)** From $V_t=V_0(1+\gamma.\Delta T)$

$\frac{V_t-V_0}{V_0}=\gamma.\Delta T$

$\frac{0.24}{100}=\gamma.40$

$\gamma=\frac{0.24}{100\times40}=6\times10^{-5}{}^\circ C^{-1}$

$\alpha=\frac{\gamma}{3}=\frac{6\times10^{-5}}{3}=2\times10^{-5}{}^\circ C^{-1}.$

67. **(2)** As we know, the minimum speed with which a body is projected so that it does not return back is called escape speed.

$V_e=\sqrt{\frac{2GM}{r}}=\sqrt{\frac{2GM}{R+h}}=\sqrt{\frac{2GM}{4R}}$

$=\left(\frac{GM}{2R}\right)^{1/2}(\because h=3R).$

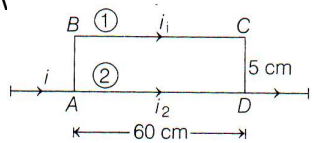
68. **(2)**

Length, AD = 60 cm

Length of bent part = 5 + 60 + 5 = 70 cm

Resistance $\propto$ Length

$R_1=70R,\ R2=60R$



$H_1=\frac{R_2}{R_1+R_2}H$

$=\frac{60R}{70R+60R}\times130=60\ \text{J}$

69. **(3)** As P-T graphs are straight lines, passing through origin, therefore, $P\propto T$. But as $P=\left(\frac{nR}{V}\right)T$, therefore, the slope of straight line $\propto\frac{1}{V}$.

As $(\text{Slope})_{12}<(\text{Slope})_{34}\quad\therefore V_2>V_3$

As for a given slope, V is constant,

$\therefore\ V_1=V_2\ \ and\ \ V_3=V_4.$

70. **(4)**

71. **(1)** Let radius of small drop = r

Volume of n drops $=n\frac{4}{3}\pi r^3$

Let R be the radius of bigger drop.

Volume will remain same.

$\frac{4}{3}\pi R^3=\frac{4}{3}\pi nr^3$

or $R=n^{1/3}r\qquad\therefore C=4\pi\varepsilon_0 r$

$C'=4\pi\varepsilon_0 R$

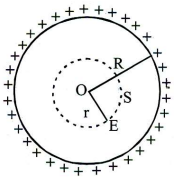
Hence, $C'=Cn^{1/3}$

72. **(1)** Charge resides on the outer surface of a conducting hollow sphere of radius R. We consider a spherical surface of radius r < R.

$\int_S\vec{E}.\vec{ds}=\frac{1}{\varepsilon_0}\times$ charge enclosed or

$E\times4\pi r^2=\frac{1}{\varepsilon_0}\times0$

$\Rightarrow E=0$



i.e. electric field inside a hollow sphere is zero.

73. **(1)** $B_1\propto\frac{3I}{r}$ (Field due to AB, BC and CD)

$B_2\propto3\times\frac{I}{r}$ (Field due to AD)

Clearly, the two fields are equal in magnitude and the opposite in direction.

74. **(1)** Given that $K_p=K_d=K_\alpha=K(\text{say})$. We know that $m_p=m, m_d=2m$ and $m_\alpha=4m$ and $q_p=e, q_d=e$ and $q_\alpha=2e$

Further, $r=\frac{\sqrt{2mK}}{qB}\Rightarrow r_p=\frac{\sqrt{2mK}}{eB}$

$r_d=\frac{\sqrt{2(2m)K}}{eB}=\sqrt{2}r_p$

and $r_\alpha = \frac{\sqrt{2(4m)K}}{(2e)B} = r_p$. Hence, $r_\alpha = r_p < r_d$

75. **(4)** The situation is equivalent to a conductor of effective length $L = 2r$ falling in horizontal magnetic field. Therefore, induced emf e = pot. diff, developed $= BL\upsilon = B(2r)\upsilon = 2rB\upsilon$. The direction of current is from R to P. Therefore, R is at higher potential.

76. **(1)** $\frac{\varepsilon_1}{\varepsilon_2} = \frac{N_1}{N_2} = \frac{100}{10} \Rightarrow \varepsilon_2 = 22\,V$

$I = \frac{22}{44\times10^3} = \frac{1}{2}mA,\ V_0 = \frac{1}{2}mA \times 14k\Omega = 7\,V$

77. **(1)** Stopping potential is a measure of maximum kinetic energy of emitted photoelectron ($eV_n = K_{max}$) and K_{max} depends upon the frequency of incident light but is independent of intensity.

78. **(1)** Energy of a H-like atom in it's nth state is given by

$E_n = -Z^2 \times \frac{13.6}{n^2} eV$

For, first excited state of He^+, n = 2, Z = 2

$\therefore E_{He^+} = -\frac{4}{2^2} \times 13.6 = -13.6eV.$

79. **(3)**

80. **(4)** In first case, $W_1 = \frac{1}{2}kx^2$

In second case,

$W_2 = \frac{1}{2}k(3x^2) - \frac{1}{2}kx^2 = 8 \times \frac{1}{2}kx^2 = 8W_1.$

81. **(3)** From the given equation $k = 8\ ms^{-1}$ and $\omega = 4$ rad/s

Velocity of wave $= \frac{\omega}{k}$

$v = \frac{4}{8} = 0.5\ m/s$

82. **(1)** $R_s = \frac{I_g R_g}{I - I_g}$

$\frac{1\times10^{-3}\times100}{10-0.001} \approx 0.01\Omega$

83. **(4)** Condition for minimum path diff. $= (2n-1)\frac{\lambda}{2}$.

For $n = 3$, path diff. $= (2 \times 3 - 1)\ \frac{\lambda}{2} = \frac{5\lambda}{2}$

84. **(1)**

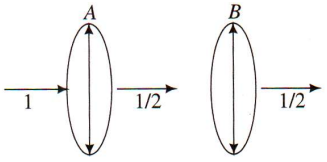
85. **(3)** Energy released

$= (80 \times 7 + 120 \times 8) - (200 \times 6.5)$

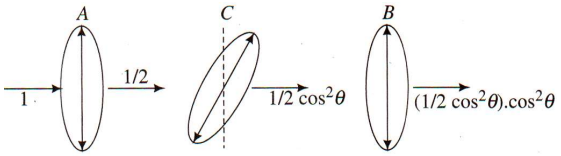
$= 220 = 2 \times 110$ MeV.

SECTION - B (Attempt Any 10 Questions)

86. **(4)** Axis of transmission of A and B are parallel.



Now



$\frac{I}{2}\cos^4\theta = \frac{I}{8} \Rightarrow \cos^4\theta = \frac{1}{4}$

$\cos\theta = \frac{1}{\sqrt{2}} \Rightarrow \theta = 45^0$

87. **(2)** $[C^2LR] = \left[C^2L^2\frac{R}{L}\right] = \left[(LC)^2\left(\frac{R}{L}\right)\right]$

and we know that frequency of LC circuits is given by

$f = \frac{1}{2\pi}\frac{1}{\sqrt{LC}}$ i.e., the dimension of LC is equal to $[T^2]$ and [L/R] gives the time constant of L-R circuit so the dimension of L/R is equal to [T].

By substituting the above dimensions in the given formula $\left[(LC)^2\left(\frac{R}{L}\right)\right] = [T^2]^2[T^{-1}] = [T^3]$.

88. **(4)** $\frac{1}{f_{air}} = (\mu-1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$

Here, $\frac{1}{f_l} = (1.6-1)\left(\frac{1}{\infty} - \frac{1}{20}\right)$

$f_l = \frac{-100}{3}$ So $\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2} + \frac{1}{f_3} = \frac{-3}{100} + \frac{-3}{100} + \frac{1}{20}$

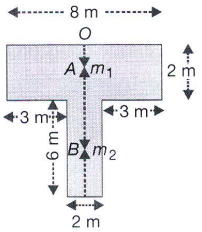
$\therefore\ f = -100$ cm.

89. **(2)** Taking parts A and B as two bodies of same system,

$m_1 = l \times b \times \sigma = 8 \times 2 \times \sigma = 16\sigma$

$m_2 = l \times b \times \sigma = 6 \times 2 \times \sigma = 12\sigma$

Choosing O as the origin,



$x_1 = 1m, x_2 = 2 + 3 = 5m$

$= \frac{16\sigma \times 1 + 12\sigma \times 5}{16\sigma + 12\sigma} = \frac{19}{7}$.

90. **(1)** For PV^x = constant

If work done by gas is asked then

$W = \frac{nR\Delta T}{1-x}$

Here $x = \frac{3}{2}$

$\therefore W = \frac{P_2V_2 - P_1V_1}{-1/2}$

$= 2(P_1V_1 - P_2V_2)$ ....Option (1) is correct.

91. **(2)** $T_C = 260 = 10 \times 10 + 10(10 + a)$

$\Rightarrow a = 6$ m/s^2

92. **(4)** $\vec{B}$ is measured in tesla ; $\vec{H}$ is measured in ampere/meter, μ is measured in tesla metre/ampere. χ_m has no units.

93. **(3)** Surface tension will be less as temperature increases

$h = \frac{2T\cos\theta}{\rho g r}$

Height of capillary rise will be smaller in hot water and larger in cold water.

94. **(2)** $v = \sqrt{\frac{2gh}{1 + \frac{k^2}{R^2}}}$

For a solid sphere,

$\frac{k^2}{R^2} = \frac{2}{5} = \frac{2}{5}; v = \sqrt{\frac{2 \times 10 \times 7}{\left(1 + \frac{2}{5}\right)}} = 10$ m/s

95. **(1)** $B = \frac{E}{c} = \frac{19.2}{3 \times 10^8} = 6.4 \times 10^{-8} T$

$\hat{E} \times \hat{B} = \hat{i} \Rightarrow \hat{B} = \hat{k}$

96. **(3)** Here, $T = 4$s ; Displacement $y = a - a/2 = a/2$

As $y = a\cos\omega t = a\cos\frac{2\pi}{T}t$

$\therefore \frac{a}{2} = a\cos\frac{2\pi}{4}t$ or $\cos\frac{2\pi}{4} = \frac{1}{2} = \cos\frac{\pi}{3}$

or $\frac{2\pi t}{4} = \frac{\pi}{3}$ or $t = \frac{2}{3}$s.

97. **(1)** $n_e = 8 \times 10^{13}/\text{cm}^3$, $n_h = 5 \times 10^{13}/\text{cm}^3$

$\mu_e = 25000$ cm^2 V^{-1} sec^{-1}, $\mu_h = 1000$ cm^2 V^{-1} sec^{-1}

$\sigma = n_e\mu_e e + n_h \mu_e e$

$= (8 \times 10^{13} \times 25000 + 5 \times 10^{13} \times 1000) \times 1.6 \times 10^{-19}$

$= 328 \times 10^{-3}$ mho/cm

$n_e > n_h (n - \text{type})$

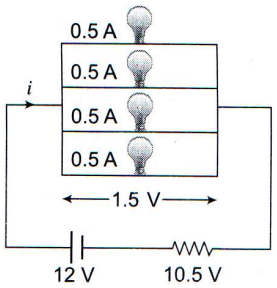
98. **(3)** Capacitive reactance, $X_C = \frac{1}{\omega C} = \frac{1}{2\pi\upsilon C}$

$\Rightarrow X_L \propto \frac{1}{\upsilon}$

With increases in frequency, X_C decreases.

Hence, option (3) represents the correct graph.

99. **(2)** For normal brightness of each bulb see following circuit. current through each bulb = 0.5 A



So main current $i = 2$A

Also, voltage across the combination = 1.5 V

So voltage across the resistance = 10.5 V

Hence, for resistance, $V = iR \Rightarrow 10.5 = 2 \times R = R$

$= \frac{21}{4}\Omega$

100. **(3)** Charge on capacitor plates without the dielectric is $Q = CV = (5 \times 10^{-6}\text{ F}) \times 1\text{V} = 5 \times 10^{-6}$ C = 5 μC

The capacitance after the dielectric is introduced is

$C' = \frac{\varepsilon_0 A}{d - \left(t - \frac{t}{K}\right)} = \frac{\varepsilon_0 A / d}{1 - \left(\frac{t - \frac{t}{K}}{d}\right)}$

$$= \frac{C}{1-\left(\frac{t-\frac{t}{K}}{d}\right)} = \frac{5\mu F}{1-\left(\frac{4\,cm-\frac{4\,cm}{4}}{6\,cm}\right)} = \frac{5\mu F}{1-\left(\frac{4-1}{6}\right)} = 10\,\mu F$$

$\therefore$ Charge on capacitor plates now will be

$Q' = C'V = 10\,\mu F \times 1V = 10\,\mu C$

Additional charge transferred =

$Q' - Q = 10\,\mu C - 5\,\mu C = 5\,\mu C$

BOTANY

Section - A (35 Questions)

101. **(3)** [NCERT XI, Page No. 76; Sub-topic]
102. **(4)** (NCERT XIIth Pg 83, Para 2)
103. **(4)** (NCERT 11th, Page no- 7, 2nd Paragraph, Line no- 10-12)
104. **(2)** (NCERT 11th, Page no- 22, 1st paragraph, Line no- 7,8)
105. **(4)** [NCERT XI, Newly added families)
106. **(1)** (NCERT XIIth Pg 111, Based on RNA processing (Splicing))
107. **(3)** (NCERT XIIth Pg Pg 118, Para 3, Line 1-2)
108. **(2)** (NCERT XIIth Pg Pg 97, Based on DNA structure)
109. **(3)** (NCERT XIIth Pg 96, Para 4, Line 11)
110. **(4)** (NCERT XI page no. 219, 2nd paragraph)
111. **(4)** (11th Para 8.5.1, Page no.131)
112. **(4)** (NCERT 12th Page no- 25, Last Paragraph, Line no-13,14)
113. **(3)** (NCERT 12th, Page no- 23, Paragraph-2, line-6,7,8,9)
114. **(3)** (NCERT XIIth Pg 88, based on Pedigree Analysis)
115. **(1)** (NCERT XI page no. 218, 4th paragraph 2nd last line)
116. **(3)** (12th NCERT Page no.249, 3rd para pyramid based)
117. **(2)** (11th Para 8.5.1, Page no.131)
118. **(2)** (11th Para 10.1.1 based , Page no.163)
119. **(4)** (11th Para 10.4.1, Page no.168)
120. **(2)** (NCERT XI Pg.230, 14.3, 3rd Para, 1st line)
121. **(4)** [NCERT XI, Page No. 79; Sub-topic 5.9.1]
122. **(2)** (11th NCERT P.K. concept ,3.2 to 3.3)
123. **(3)** (11th NCERT Page no 31 to 39 Conceptual)
124. **(1)** (NCERT XI Pg.236, 14.7, 1st Para, 1st line)
125. **(3)** (11th NCERT PK, Conceptual, bryo to gymno)
126. **(3)** [NCERT class XI, Page no. 88, Point 6.2.1- Last paragraph]
127. **(4)** [NCERT class XI, Page 250, Point 15.4.3.4, (Third paragraph)]
128. **(3)** (Pg 122, Based on gel electophoresis)
129. **(2)** (NCERT XIIth Pg 79, based on Figure 5.7)
130. **(2)** (NCERT 12th, Page no- 24, Paragraph- 2.2.2, Line no- 1, 2, 6,7)
131. **(4)** (NCERT 11th, Page no- 21, paragraph- 2.2.4, Line no- 28-30)
132. **(3)** (NCERT 11th, Page no- 24, paragraph- 2.3.3, Line no- 12)
133. **(4)** (NCERT XIIth Pg 84, based on Figure 5.11)
134. **(1)** [NCERT class XI,Page 243, First paragraph]
135. **(2)** [NCERT class XI, Page 248, point 15.4.3.1 (Last paragraph)]

SECTION - B (Attempt Any 10 Questions)

136. **(1)** [NCERT class XI, page no. 89 (First paragraph), 94 (Second paragraph) + NCERT Exemplar, Question no. 03]
137. **(1)** [NCERT XI, Page No. 79 & 80; Sub-topic 5.9.1 & 5.9.2]
138. **(3)** (NCERT XIIth Pg 85, based on POLYGENIC INHERITANCE)
139. **(2)** (11th Para 10.5, Page no.170)
140. **(2)** (NCERT XI Pg.243, Fig.14.4, Diagram)
141. **(1)** (11th Para 8.5.6 concept based, Page no.136)
142. **(3)** (NCERT XIIth Pg 113, Point 6.6.1)
143. **(4)** (NCERT XI page no. 220, sub-topic 13.9 – 3rd paragraph)

144. **(1)** (NCERT XIIth Pg 80, based on Law of Independent Assortment)
145. **(2)** (NCERT 11th, Page no- 9, Paragraph- 1.3.1, Line no- 5,6)
146. **(2)** (11th Para 8.5.11 Page no.140)
147. **(3)** (NCERT 11th, Page no- 23,24, Conceptual)
148. **(3)** (NCERT 12th, Page no22, 1st paragraph, Line no- 1-5 Concept based)
149. **(4)** (12th NCERT Page no.244-last para to 245-2nd para)
150. **(2)** (11th NCERT PK Page no.33 Table3.1, page 34 to 39, conceptual.)

ZOOLOGY

Section - A (35 Questions)

151. **(3)** (NCERT page no. 262 (ii) sp.-Area relation,summary 268,3rd para.)
152. **(1)** (NCERT XI Page No. 291, 1st paragraph)
153. **(1)** (NCERT XI Page No. 292, 1st line)
154. **(3)** (NCERT XI Page No. 333, 9th line of 2nd paragraph)
155. **(1)** (NCERT XI Page No. 333, 15th line of 2nd paragraph)
156. **(3)** [NCERT P.No.310 12th Line]
157. **(2)** [NCERT P.No.312, Synovial Joints]
158. **(1)** (NCERT Pg. No. 284-285)
159. **(2)** (NCERT Pg. No. 161)
160. **(1)** (NCERT 12th, Page no- 127, 3rd paragraph, line no- 8,9)
    (NCERT 12th, Page no- 130, Last paragraph, line no- 9,10)
161. **(1)** (NCERT11th page no 101, para1)
162. **(2)** (NCERT12th page no 62, para1)
163. **(3)** (NCERT12th, page no 60, para2)
164. **(2)** (NCERT 12th, Page no- 137, 2nd paragraph, line no-3-8)
165. **(2)** (NCERT 11th, Page no- 144, 2nd Paragraph, Line no- 1)
166. **(3)** (NCERT 11th, Page no- 148, Paragraph-9.5, Line no- 13,14)
167. **(1)** (NCERT XI Page No. 47; 4.1.2)
168. **(1)** (NCERT XI Page No. 59; 1st Paragraph)
169. **(3)** (NCERT11th page 118, para2, line14)
170. **(4)** (12th Para 10.1, Page no.186)
171. **(2)** (NCERT Pg. No.154)
172. **(2)** (NCERT Pg. No. 284)
173. **(3)** (NCERT 12th, Page no- 135, Last paragraph, line no- 7,8)
174. **(3)** (12th NCERT Page no.234 2nd para.)
175. **(3)** (NCERT 12th HR)
176. **(2)** (NCERT12th page no 46, para3)
177. **(2)** (12th Para 10.1, Page no.186)
178. **(2)** [NCERT P.No.214, Last para]
179. **(3)** [NCERT Examplar,]
180. **(4)** (NCERT Pg. No. 153-154)
181. **(4)** (NCERT Pg. No.281)
182. **(1)** [NCERT P.No.306,1st Para]
183. **(2)** [NCERT P.No.316, Human Neural System, 15th Line]
184. **(2)** [NCERT P.No.320 CNS 2nd para]
185. **(2)** [NCERT P.No.195 and 202,]

SECTION - B (Attempt Any 10 Questions)

186. **(2)** (12th NCERT Page no.265,15.2.1,2nd para.)
187. **(4)** (12th NCERT Page no.263,3rd para)
188. **(2)** (NCERT 12th, p.no.52,53)
189. **(3)** (NCERT12th page 64,4.5 infertility)
190. **(1)** (NCERT Pg. No. 158-159)
191. **(2)** (NCERT 12th, Page no- 137, 3rd paragraph, line no-1 and 2)
192. **(3)** (NCERT XI NCERT Conceptual)
193. **(3)** (NCERT 11th, Page no- 159, Paragraph-9.12.6, Line no- 16, 17)
194. **(1)** (NCERT Pg. No. 272)
195. **(4)** (12th Para 10.2.3, Page no. 183)
196. **(4)** (NCERT Pg. No. 148)
197. **(2)** (NCERT11th page 115, para1)
198. **(3)** [NCERT P.No.302, 2nd para]
199. **(2)** [NCERT P.No.312]
200. **(3)** [NCERT P.No.209, Pest Resistant Plants 1st para]