P ANSWER KEY & SOLUTION KEY FINAL ROUND - 06 (PCB) Dt.12.04.2024

PHYSICS

SECTION - A (35 Questions)

01. **(3)** Electron and proton have same amount of charge so they have same coulomb force. They have different acceleration because they have different masses.

02. **(2)**

03. **(2)** $dq = \int_2^3 (3t^2 + 4t^3)dt = (t^3 + t^4)_2^3$

$27 + 81 - 24 = 84$

04. **(3)**

05. **(2)** We know that, $v_e = \sqrt{2gR}$

$$\therefore \frac{(v_e)_{P_1}}{(v_e)_{P_2}} = \frac{\sqrt{2g_1R_1}}{\sqrt{2g_2R_2}} = \sqrt{\frac{g_1}{g_2}}.\sqrt{\frac{R_1}{R_2}} = \sqrt{kr}.$$

06. **(3)** Since, Kiran's initial and final positions coincides.

Thus, his displacement,

$\Delta x = x_{final} - x_{initial} = 0$

However, corresponding path length

$240 + 240 = 480$ m

Thus, the magnitude of the displacement for the given course of motion is zero but the corresponding path length is 480 m.

So, all statements are correct.

07. **(4)**

08. **(1)** When a person walks on the road, he exerts a force on floor. According to Newton's third law of motion, a reaction force exerts on the person which is being provided by the frictional force.

Thus, the frictional force helps a person to walk on a rough surface.

Thus, the statement given in option (1) is incorrect, rest are correct.

09. **(3)**

10. **(2)**

11. **(3)** The change in length corresponds to longitudinal strain and change in shape corresponds to shearing strain.

12. **(2)**

13. **(3)** According to parallel axes theorem,

$$I = I_{CG} + Md^2 = \frac{Ml^2}{12} + Md^2$$

$$= 300\left[\frac{100^2}{12} + 20^2\right] = 3.7 \times 10^5 \text{ gm-cm}^2$$

14. **(4)** According to Newton's law of cooling,

$$\frac{dQ}{dt} \propto \Delta\theta$$

But $\frac{dQ}{dt} \propto (\Delta\theta)^n$ (given)

$\therefore \quad n = 1$

15. **(4)** Here, $P_1 = 4$atm, $T_1 = 27°C = 300$ K, $V_1 = 1500 m^3$,
$P_2 = 2$ atm, $T_2 = -3°C = 270$ K, $V_2 = ?$

As $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

$$\therefore V_2 = \frac{P_1V_1T_2}{T_1P_2} = \frac{4 \times 1500 \times 270}{300 \times 2} = 2700 m^3$$

16. **(2)** B.E. = 0.042 × 931 = 39.1 MeV

Number of nucleon in ^7_3Li is 7.

$$\therefore \frac{B.E.}{nucleon} = \frac{39.1}{7} = 5.6 MeV.$$

17. **(4)** As $\sigma_1 = \sigma_2$

$$\therefore \frac{Q_1}{4\pi r_1^2} = \frac{Q_2}{4\pi r_2^2} \text{ or } \frac{Q_1}{4\pi\varepsilon_0 r_1^2} = \frac{Q_2}{4\pi\varepsilon_0 r_2^2}$$

$\therefore E_1 = E_2$ or $E_1/E_2 = 1 \Rightarrow E_1 : E_2 = 1:1$

18. **(3)** Loudness of sound is given by

$$dB = 10\log\frac{I}{I_0}\begin{bmatrix} \text{I is intensity of sound} \\ \text{I}_0\text{is reference intensity of sound} \end{bmatrix}$$

$$\therefore 120 = 10\log\left(\frac{I}{I_0}\right)$$

$\Rightarrow I = 1 W/m^2$

Also $I = \frac{P}{4\pi r^2} = \frac{2}{4\pi r^2}$

$\therefore r = \sqrt{\frac{2}{4\pi}} = \sqrt{\frac{1}{2\pi}} m = 0.399m = 40 \text{ cm}$

19. **(2)** As $\beta = \frac{\lambda D}{d}$ $\therefore \beta = \frac{1}{d}$. Curve (2) is correct.

20. **(3)** The net flux linked with closed surfaces S_1, S_2, S_3 & S_4 are

For surfaces $S_1, \phi_1 = \frac{1}{\varepsilon_0}(2q)$

For surface $S_2, \phi_2 = \frac{1}{\varepsilon_0}(q+q+q-q) = \frac{1}{\varepsilon_0}2q$

For surface $S_3, \phi_3 = \frac{1}{\varepsilon_0}(q+q) = \frac{1}{\varepsilon_0}(2q)$

For surface $S_4, \phi_4 = \frac{1}{\varepsilon_0}(8q-2q-4q) = \frac{1}{\varepsilon_0}(2q)$

Hence, $\phi_1 = \phi_2 = \phi_3 = \phi_4$ i.e. net electric flux is same for all surfaces.

Keep in mind, the electric field due to a charge outside ($S_3$and S_4), the Gaussian surface contributes zero net flux through the surface, because as many lines due to that charge enter the surface as leave it.

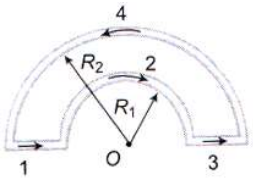
21. **(2)** $\frac{I_g}{I_s} = \frac{s}{R_g}$

$R_g = \frac{50-20}{20} \times 30\Omega \Rightarrow \frac{3}{2} \times 30\Omega = 45\Omega$

22. **(2)** Put $y = 0$,

$0 = 12x - \frac{3}{4}x^2 \Rightarrow x = 16m$

23. **(1)** In the following figure, magnetic fields at O due to section 1, 2, 3 and 4 are considered as B_1, B_2 and B_3 and B_4, respectively.



$B_1 = B_3 = 0$

$B_2 = \frac{\mu_0}{4\pi} \cdot \frac{\pi i}{R_1} \otimes$

$B_4 = \frac{\mu_0}{4\pi} \cdot \frac{\pi i}{R_2} \odot$

As $|B_2| > |B_4|$

So $B_{net} = B_2 - B_4 \Rightarrow B_{net} = \frac{\mu_0 i}{4}\left(\frac{1}{R_1} - \frac{1}{R_2}\right) \otimes$

24. **(1)** Here, M = 0.4 JT^{-1}; B = 0.16 T

For stable equilibrium, the potential energy (U) of bar magnet in the magnetic field is

U = –MB = -0.4 × 0.16 = –0.064 J

25. **(4)** Magnetic potential energy,

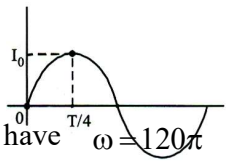
$U = 25$ mJ = 25 × 10^{-3} J

Inductance, $L = ?$

From $U = \frac{1}{2}LI^2$

$L = \frac{2U}{I^2} = \frac{2 \times 25 \times 10^{-3}}{(60 \times 10^{-3})^2} = \frac{500}{36} = 13.89H.$

26. **(4)**



We have $\omega = 120\pi$

and, $T = \frac{2\pi}{\omega} = \frac{2\pi}{120\pi} = \frac{1}{60}$

So, req. time $= \frac{T}{4} = \frac{1}{240}$s

27. **(3)** $X = \frac{2k^3l^2}{m\sqrt{n}}$

The percentage error in X is given by

$\frac{\Delta X}{X} \times 100 = \left(3\frac{\Delta k}{k} + 2\frac{\Delta l}{l} + \frac{\Delta m}{m} + \frac{1}{2}\frac{\Delta n}{n}\right) \times 100$

$= 3 \times 1\% + 2 \times 2\% + 3\% + \frac{1}{2} \times 4\%$

= 3% + 4% + 3% + 2% = 12%

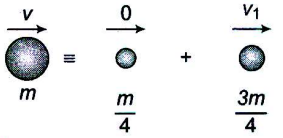
Thus, the value of X is uncertain by 12%

28. **(2)** $B_0 = \frac{E_0}{c}$

E and B are in same phase.

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

29. **(4)**



By the momentum conservation

$$mv = \frac{3m}{4} v_1 \Rightarrow v_1 = \frac{4v}{3}.$$

30. **(1)** Momentum, $p = mv = \dfrac{\frac{1}{2} mv \times v}{\frac{1}{2} \times v} = \dfrac{2KE}{v}$

If KE as well as speed are doubled, momentum p remains unchanged.

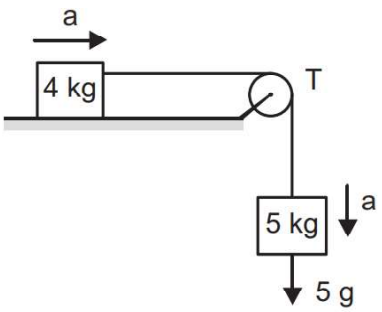
$$\therefore \ \lambda = \frac{h}{p}.$$

Hence, de Broglie wavelength will remain unchanged.

31. **(4)** $E = E_4 - E_3 = -\dfrac{13.6}{4^2} - \left(-\dfrac{13.6}{3^2}\right)$

$= -0.85 + 1.51 = 0.66$ eV.

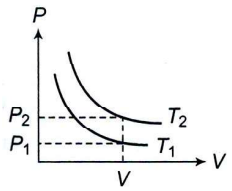
32. **(4)**



$$a = \frac{\text{Net driving force}}{\text{Total mass in motion}} = \frac{5g}{5+4} = \frac{5g}{9}$$

33. **(1)** It is a system of two springs in parallel. The restoring force on the body is due to springs and not due to gravity pull.
Therefore, slope is irrelevant. Here the effective spring constant $= k + k = 2k$;
Thus time period, $T = 2\pi\sqrt{M / 2k}$.

34. **(3)**



$$n = \frac{P_2 V}{RT_2} = \frac{P_1 V}{RT_1}$$

$$\frac{P_2}{T_2} = \frac{P_1}{T_1}$$

Since $P_2 > P_1$, hence, $T_2 > T_1$

35. **(1)** Red light and blue light have different wavelength and different frequency.

SECTION - B (Attempt Any 10 Questions)

36. **(3)** $f = -15$ cm (as mirror is concave)
$m = -2$ (–ve sign is due to virtual image)

$$m = \frac{v}{u}$$

or $-2 = \dfrac{v}{u} \Rightarrow v = -2u$

Also, $\dfrac{1}{f} = \dfrac{1}{v} + \dfrac{1}{u} = -\dfrac{1}{2u} + \dfrac{1}{u} = \dfrac{1}{2u}$

$$\therefore \ u = \frac{f}{2} = \frac{-15}{2} = -7.5\text{cm}.$$

37. **(1)** From the principle of dimensional homogeneity $[\alpha t] =$ dimensionless

$$\therefore [\alpha] = \left[\frac{1}{t}\right] = [T^{-1}]$$

Similarly, $[x] = \dfrac{[v_0]}{[\alpha]}$

$$\therefore [v_0] = [x][\alpha] = [L][T^{-1}] = [LT^{-1}]$$

38. **(1)** Number significant figures 23.023 is 5.
And, that of is 1.
And, that of is 2.

39. **(2)** Gases have less viscosity.
Due to insoluble impurities like detergent surface tension decreases

40. **(1)** Here, $h = 100$ m, $\Delta T = ?$
If m is mass of water, then energy converted into heat,
$Q = mgh$
If ΔT is rise in temperature, then
$Q = cm\Delta T = mgh$

$$\Delta T = \frac{gh}{c} = \frac{10 \times 100}{4200} = 0.23°C.$$

41. **(4)** Here, $a = 14$cm, $y = 11$ cm, V = 80 m/s, $v = ?$

$$V = \omega\sqrt{a^2 - y^2} = 2\pi v\sqrt{a^2 - y^2}$$

$$v = \frac{V}{2\pi\sqrt{a^2 - y^2}}$$

$$v = \frac{80}{2\pi\sqrt{14^2 - 11^2}} = \frac{40}{\pi \times 5\sqrt{3}} = \frac{8}{\pi \times \sqrt{3}} Hz.$$

42. **(4)** The electric field on one plate due to the charge on the other is $E = \dfrac{Q}{2A\varepsilon_0}$

$\therefore$ The force on one plate due to the charge on the other is

$$F = QE = Q\left(\frac{Q}{2A\varepsilon_0}\right) = \frac{Q^2}{2A\varepsilon_0}$$

43. **(3)** Impedance at resonant frequency is minimum in series LCR circuit.

So, $Z = \sqrt{R^2 + \left(2\pi fL - \frac{1}{2\pi fC}\right)^2}$

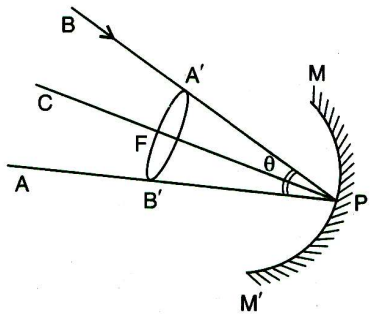
When frequency is increased or decreased, Z increases.

44. **(1)** Since, the sun is very distant, u is very large and so $(1/u)$ is practically zero.

So, $\frac{1}{v} + 0 = -\frac{1}{f}$

i.e., the image of sun will be formed at the focus and will be real, inverted and diminished.

Now, as the rays from the sun subtend an angle θ radians at the pole, hence, according to figure, we have



$$\theta = \frac{A'B'}{FP} = \frac{d}{f}$$

(where d = diameter of the image of the sun)

i.e., $d = \theta f$.

45. **(1)** $y = 7\sin(7\pi t - 0.04x + \pi/3)$

Compare it with the standard equation of wave motion

$$y = r\sin\left(\frac{2\pi}{T}t - \frac{2\pi}{\lambda}x + \phi\right)$$

$\frac{2\pi}{t} = 7\pi$, $T = \frac{2}{7}s$, and

$\frac{2\pi}{\lambda} = 0.04, \lambda = \frac{2\pi}{0.04} = 50\pi\, m$

$v = \frac{\lambda}{T} = \frac{50\pi}{2/7} = 175\pi$ m/s

46. **(1)** SI unit of magnetic flux, induced emf coefficient of self-inductance and magnetic energy are respectively the weber, volt, henry and joule. Choice (1) is correct.

47. **(2)**

48. **(4)** Resolve the 90 N, 80 N and 70 N forces into x and y components. The line of action of 90 N, 50 N, and x-components of the 80 N and 70 N forces pass through the pivot point A, therefore they cause on rotation.

$\therefore$ The total torque about point A is

$$= (80\sin 30^\circ)\left(\frac{L}{2}\right) - (60)\left(\frac{L}{2}\right) + (70\cos 60^\circ)(L)$$

$$= (80)\left(\frac{1}{2}\right)\left(\frac{3}{2}\right) - (60)\left(\frac{3}{2}\right) + (70)\left(\frac{1}{2}\right)(3) = 75\,\text{N m}.$$

49. **(4)** When a charged particle is moving on a circular path in a magnetic field, the magnitude of velocity does not change but direction of velocity is changing every moment. Hence velocity is changing, so momentum $(m\vec{v})$ is also changing.

50. **(3)** $E = \frac{p^2}{2m} \Rightarrow \sqrt{E} \propto p$

$\Rightarrow \sqrt{E} \propto \frac{1}{(1/p)}$

CHEMISTRY

SECTION - A (35 Questions)

51. **(2)**
Greater the stability lesser will be heat of hydrogenation.
Trans–2–butene more stable, less heat of hydrogenation.

52. **(3)**
Electrophilic addition reaction involves rearrangement of carbocation.

53. **(3)**
Conceptual fact.

54. **(2)**
The second ionisation potential of Mg is greater than the second ionisation potential of Na.

55. **(4)**
Multiple proportions

56. **(2)**
$Na_2SO_4.10H_2O = 2\times23 + 32 + 4\times16 + 10\times18$
$= 46 + 32 + 64 + 180 = 322$gm
322gm $Na_2SO_4.10H_2O$ contains = 224 gm oxygen
32.2gm $Na_2SO_4.10H_2O$ contains

$= \frac{32.2\times224}{322} = 22.4$ gm

57. **(4)**
t-alkyl halide undergoes elimination.

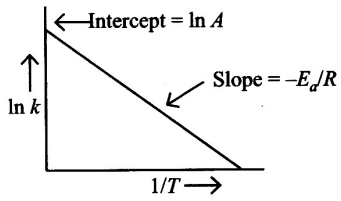
58. **(3)**
–OR is ring activating group and ortho para directing group.

59. **(1)**
White phosphorus is soluble in CS_2 whereas red phosphorus is insoluble in it.

60. **(4)**
Small hydrogen atoms can easily fit in between boron atoms but large chlorine atoms do not

61. **(3)**
The oxidation state of oxygen in H_2O_2 is –1 which is a intermediate oxidation state value for oxygen hence H_2O_2 can act both as reducing as well as oxidising agent.

62. **(2)**



$$-\frac{E_a}{R} = -5\times10^3 = -5000$$

$$\Rightarrow E_a = 5000 \times 8.314 = 41570 \text{ J mol}^{-1}$$
$$= 41.57 \text{ kJ mol}^{-1}$$

63. **(2)**

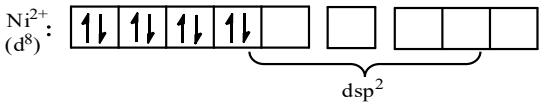
$$CH_3COOH \xrightarrow[\Delta]{NH_3} CH_3CONH_2$$

$$\xrightarrow{P_2O_5} CH_3C\equiv N \xrightarrow[C_2H_5OH]{Na+} CH_3\text{-}CH_2\text{-}NH_2$$

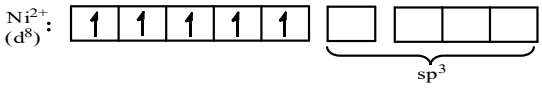
64. **(1)**
From Kjeldahl's method,
Percentage of nitrogen

$$= \frac{1.4\times N\times V}{W} = \frac{1.4\times0.1\times30}{5} = 0.84\%$$

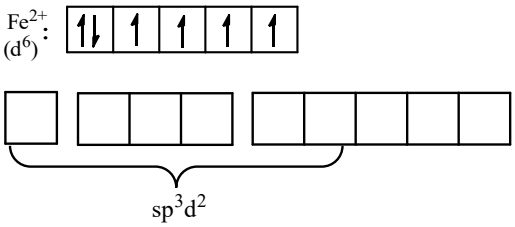
65. **(4)**
Majority of four co-ordinated complexes of nickel are square planar.
MnX_4^{2-} complex are tetrahedral.
F^- is a weak field ligand. $[FeF_6]^{4-}$ is thus a high spin complex with sp^3d^2 hybridisation.



No unpaired electrons : diamagnetic

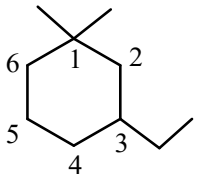


$n = 5, N = \sqrt{n(n+2)} = 5.9$ B.M.



$n = 4, N = \sqrt{n(n+2)} = 4.9$ B.M.

66 **(3)**



3-Ethyl-1, 1-dimethyl cyclo hexane

67. **(4)**
For a first order reaction half-life period is constant i.e. it is independent of initial concentration of the reacting species. It is related to rate constant as

$$t_{1/2} = \frac{0.693}{k}.$$

68. **(4)**
We know that
$\Delta H = \Delta E + P\Delta V$
In the reactions, $H_2 + Br_2 \rightarrow 2HBr$ there is no change in volume or $\Delta V = 0$.
So, $\Delta H = \Delta E$ for this reaction.

69. **(1)**
(i)–(b), (ii)–(a), (iii)–(d), (iv)–(e), (v)–(c)

70. **(2)**
$KMnO_4$ is purple in colour due to (ligand $\rightarrow$ metal) charge transfer phenomenon.
There is no electron present in d-orbitals of manganese in MnO^-_4 (O.S. of Mn is +7).

71. **(1)**
Both A and R are true but R is not the correct explanation of A.
KCl, NaCl and NH_4Cl cannot be used as a salt-bridge in a cell containing silver or silver ion because they react with it to form a ppt. of AgCl.

72. **(2)**
$Zn^{2+}(aq) + 2e^- \rightarrow Zn(s)$; $E^o = -0.76$ V
$Ag_2O(s) + H_2O(l) + 2e- \rightarrow 2Ag(s) + 2OH^-(aq)$; $E^o = 0.34$ V
$Zn(s) + Ag_2O(s) + H_2O(l) \rightleftharpoons 2Ag(s) + Zn^{2+}(aq) + 2OH^-(aq)$, ; $E_{cell} = ?$

$E^{o}_{cell} = (E^{o}_{R.P.})_{cathode} - (E^{o}_{R.P.})_{anode}$

$E^{o}_{cell} = 0.34 - (-0.76) = 1.10$ V

$E_{cell} = E^{o}_{cell} = 1.10$ V

73. **(3)**

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

74. **(3)**

I, II and IV only

75. **(3)**

Melting point of Fe is more than of Mn

$_{25}Mn \longrightarrow [Ar]^{18} 3d^5 4s^2 \rightarrow 5$ unpaired electrons.

$_{26}Fe \longrightarrow [Ar]^{18} 3d^6 4s^2 \rightarrow 4$ unpaired electrons

76. **(4)**

H_2O is angular and BeF_2 is linear

77. **(3)**

$$N = \frac{(10\times0.05)+(12\times0.025)+(5\times0.04)}{1} = 1$$

78. **(2)**

Among the given statements, (B) and (D) are incorrect whereas A, C and E are correct. The correct form of (B) and (D) are:

At equilibrium constant for the reverse reaction is equal to the inverse of the equilibrium constant for the forward reaction.

Equilibrium constant reflects the change in stoichiometric coefficients.

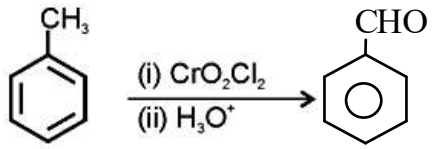
79. **(2)**

Acetonoxime

80. **(3)**

Statement-1 is false, Statement-2 is true

81. **(2)**



82. **(2)**

Methoxypropane and ethoxyethane are metamers to each other.

83. **(1)**

$(\pi^* 2p_x)^1$ and $(\pi^* 2p_y)^1$

84. **(2)**

$$\lambda = \frac{c}{v} = \frac{3\times10^{17}}{6\times10^{15}} = 50 \text{ nm}$$

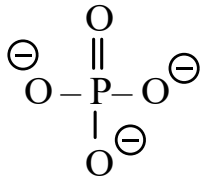
85. **(3)**

For example for $n = 3$

$\ell = 0, 1, 2$ (total 3 values)

SECTION - B (Attempt Any 10 Questions)

86. **(2)**



$$\text{B.O.} = \frac{5}{4} = 1.25$$

Due to resonance –3 charge is distributed in all the four oxygen atoms hence each oxygen has $\frac{-3}{4} = -0.75$ charge.

87. **(3)**

If (A) is right but (R) is wrong.

In allenes terminal double bonded carbons must be connected to two different groups.

88. **(2)**

A–(t), B–(p), C–(s), D–(q), E–(r)

89. **(1)**

Due to electronegativity diffeence, the stability of interhalogen compounds follows following order : $IF_3 > BrF_3 > ClF_3$

90. **(2)**

Moles of $CoCl_3.6NH_3$

$$= \frac{2.675}{267.5} = \frac{1}{100} = 0.01 \text{ mole}$$

$$\text{Moles of AgCl} = \frac{4.78}{143.5} = \frac{3}{100} \text{mole} = 0.03 \text{ mole}$$

0.01 mole of compound gives moles of AgCl = 0.03 mole So, 1 mole of compound gives moles of $AgCl = \frac{0.03}{0.01} = 3$ mole. So structural formula of compound having $3Cl^-$ ions out side of coordination sphere, so formula is $[Co(NH_3)_6]Cl_3$

91. **(3)**

$$2BrO_3^- + 12H^+ + 10Br^- \rightarrow 6Br_2 + 6H_2O$$

10 mole e^- required for formation of 6 moles of Br_2

$$\therefore \text{ n-factor of } Br_2 = \frac{10}{6} = \frac{5}{3}$$

$$\text{eq.wt.} = \frac{\text{mol.wt.}}{n} = \frac{m}{5/3} = \frac{3M}{5}$$

92. **(2)**

$$2H^+(aq.) + 2OH^-(aq.) \rightarrow 2H_2O(l);$$

$$\Delta H_1 = -55.84\times2 = -111.68 \text{ kJ/mol}$$

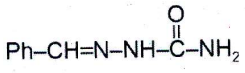
$$H_3PO_3 + 2NaOH \rightarrow Na_2HPO_3(aq) + 2H_2O(l);$$

$\Delta H_2 = -106.68$ kJ / mol

$\Delta H_{ionisation} = 111.68 - 106.68 = 5$ kJ / mol

93. **(4)**
Cannizzaro's reaction

94. **(1)**



95. **(4)**
2 and 4

96. **(2)**
A-II, B-III, C-IV, D-I

97. **(1)**

$\pi_1 = \pi_2$

$C_1 = C_2$

$\frac{5.12}{342} = \frac{0.9}{M}$

$M = 60$

98. **(4)**
Due to resonance, $C_2 - C_3$ bond is little shorter than C – C single bond length of 1.54 Å in ethane. So the most appropriate value is 1.46 Å.

99. **(2)**
Let P is initial pressure of NO_2

$$2NO_2(g) \rightleftharpoons 2NO(g) + O_2(g)$$

At eqm $P - 2x$ $2x$ x

as per given $x = 0.25$

$$K_p = \frac{(2x)^2 (x)}{(P-2x)^2}$$

$$\Rightarrow \quad 156.25 = \frac{(0.5)^2 (0.25)}{P_{NO_2}^2}$$

$$\Rightarrow \quad P_{NO_2} = 0.02$$

100. **(3)**
(P)-(2); (Q)-(1); (R)-(4); (S)-(3)

BOTANY

Section - A (35 Questions)

101. **(4)** [NCERT class XI, Page no. 87, Point 6.1.2.2 (Last line), 88 (Line no. 01)
102. **(3)** (NCERT Page no- 23, 2nd Paragraph, Concept based)
103. **(4)** (NCERT 11th, Page no- 22, Paragraph- 2.3, Line no- 18- 22)
104. **(4)** [NCERT class XI, Page no. 91, First paragraph- Last line]
105. **(2)** (11th NCERT Page no.32, Concept)
106. **(2)** (NCERT XII, Pg 91, Fig 5.15)
107. **(2)** (NCERT XII, Pg 111, Para 1, Line 2)
108. **(4)** (NCERT XII, Pg 109, Based on Transcription process)
109. **(3)** (NCERT XII, Pg 129, Para 1, Line 2)
110. **(2)** (11th Para 10.4.1, Page no.168)
111. **(1)** (NCERT XII, Pg 89, Mendelian disorder)
112. **(3)** (NCERT XII, Pg 92, Down's Syndrome- 3rd line)
113. **(3)** (11th NCERT PK, page no.28, fig.3.2(d))
114. **(2)** (11th NCERT PK, 1MMC=4spores means 10MMC×4 = 40 Spores,1spore =1Protonema =10 leafy stage.)
115. **(3)** (12TH NCERT page no.248 Fig.14.4(a),14.4(c))
116. **(3)** (11th Para 8.5.10, Figure 8.13, Page no.139)
117. **(4)** [NCERT XI, New added family]
118. **(2)** (NCERT XI Pg.227, 2nd Para)
119. **(3)** (NCERT XI Pg.235, 14.4, 2hd Para, 2nd line)
120. **(4)** (NCERT XII, Pg 80, based on Law of Independent Assortment)
121. **(2)** (NCERT 12th, Page no- 31, 2nd paragraph, Line no- 15-17)
122. **(2)** (NCERT 12th, Page no- 36, Paragraph- 2.4.3, Line no- 12,13)
123. **(1)** (NCERT 11th, Page no- 26, 2nd paragraph, Line no- 21, 22)
124. **(4)** (NCERT 11th, Page no- 7, 1st paragraph, Line no- 1-4)
125. **(4)** (NCERT XI page no. 214, fig. 13.7)
126. **(2)** (NCERT XI page no. 215, sub-topic 13.7, 3rd paragraph, last 2 lines)
127. **(4)** (NCERT XII, Pg 117, Fig- 5.14)
128. **(2)** (NCERT XII, Pg 115, Para 3, Line 5)
129. **(1)** (NCERT XII, Pg 97, Based on Chargaff's rule)
130. **(3)** (11th Para 8.5.10, Page no.139)
131. **(3)** (11th Para 8.4.2, Page no.129)
132. **(1)** (11th Para 10.2, Page no.164,165,166)
133. **(1)** [NCERT class XI, Page no. 249 (First paragraph) and 250 (Point 15.4.3.4 (Third paragraph)]
134. **(1)** [NCERT XI, Page No.75; Sub-topic 5.5.1.3 & 5.5.1.4]
135. **(3)** [NCERT XI, Page No. 80; Sub-topic 5.9.2]

SECTION - B (Attempt Any 10 Questions)

136. **(1)** [NCERT class XI, Page no. 94, Line number- 06-09]
137. **(1)** [NCERT class XI,, Page 250, Point 15.4.3.4 (First paragraph)]

138. **(1)** (NCERT XI Pg.229, Last Para, 1st line)
139. **(3)** (11th NCERT Conceptual)
140. **(4)** (NCERT Page no 20, Paragraph- 2.2, line no- 19,20)
141. **(3)** (NCERT Page no- 27, 1st Paragraph, Line no- 20,21)
142. **(3)** (NCERT XI page no. 213, fig. 13.6 and 2nd paragraph)
143. **(3)** [NCERT XI, Page No. 67, 71 & 77; Sub-topic 5.1.1; 5.3.3; 5.4; 5.7.2]
144. **(4)** (NCERT 11th, Page no- 7, Last paragraph, Line no- 33-37)
145. **(2)** (NCERT 11th, Page no- 23, Paragraph-2.3.1, Line no- 3,4)
146. **(3)** (12Th NCERT Page no.244 ,14.3,3rd para)
147. **(3)** (NCERT XII ,Pg 91, Phenylketonuria)
148. **(1)** (11th Para 8.4.1, Page no.129)
149. **(3)** (NCERT XII, Pg 112, Para 1, Line 4)
150. **(3)** (11th Para 10.4, concept based- Page no.167)

ZOOLOGY

Section - A (35 Questions)

151. **(2)** (NCERT Page no- 137, Paragraph-3, First 2 lines)
152. **(1)** [NCERT P.No.199 Fig 11.4,]
153. **(1)** [NCERT P.No.208 GMO Points Applied,]
154. **(3)** (NCERT 11th, Page no- 144, 2nd paragraph, ,Line no- 9, 10)
155. **(1)** (NCERT XI Page No. 293; 4th line of 5th paragraph.)
156. **(1)** (NCERT XI Page No. 52; phylum annelida)
157. **(1)** (NCERT XI Page No. 49, Phylum-porifera)
158. **(3)** (12th NCERT Page no.263 1st para)
159. **(4)** (12th Para 10.1, Page no.181)
160. **(4)** (12th Para 10.1, Page no.181)
161. **(3)** (NCERT XI NCERT conceptual)
162. **(3)** (12th NCERT page no.219,13.1.2 (i), 225 2nd paras)
163. **(3)** (NCERT11th, page no 102, para 3)
164. **(3)** (NCERT11th, page no 116, para 2, line 6)
165. **(1)** (NCERT 12th page no 52,53)
166. **(4)** (NCERT Pg. 269)
167. **(3)** (NCERT Pg. No. 286)
168. **(4)** (12Th NCERT Page no.231, conceptual)
169. **(2)** (NCERT 12th, page no 44, last para)
170. **(3)**(NCERT 12th, page no 46, para 2)
171. **(1)**(NCERT12th page no 46, para 2)
172. **(3)**(NCERT 12th page no 64, para 3)
173. **(4)** (NCERT Pg. No. 157)
174. **(4)** (NCERT Pg. No.157)
175. **(3)** [NCERT P.No.308 Last Para, 304 Last Para, P.No. 305 10th Line]
176. **(1)** [NCERT P.No.310 2nd para, 15th line]
177. **(4)** [NCERT P. No.321 1st Line]
178. **(3)** (NCERT XIth Page No. 270)
179. **(4)** (NCERT Pg. No. 149, 150)
180. **(2)** (NCERT Pg. No. 283)
181. **(3)** (NCERT 11th, Page no- 146, Paragraph-9.3, Concept based)
182. **(3)** [NCERT P.No.210,12.2 1st para]
183. **(3)** [NCERT P.No.317, Generation and conduction of Nerve Impulse]
184. **(2)** (NCERT 12th, Page no- 142, Summary)
185. **(3)** (NCERT 12th, Page no- 134, Figure- 7.7 concept based)

SECTION - B (Attempt Any 10 Questions)

186. **(3)** (NCERT 12th, Page no- 135, 3rd paragraph, Line no- 1-10)
187. **(2)** (NCERT 11th, Page no-147, Table-9.4)
188. **(3)** [NCERT P.No.319, First Para]
189. **(4)** [NCERT P.No.310 12th Line]
190. **(3)** (12th Para10.3 based /Page no. 184)
191. **(4)** [NCERT P.No.208, GMO Points Applied]
192. **(4)** (NCERT Pg. No. 148)
193. **(2)** (NCERT Pg. No. 157)
194. **(2)** (NCERT XI Page No. 333, Last 2 lines of 1st paragraph)
195. **(1)** (NCERT XI Page No. 48, 4.1.6)
196. **(1)** [NCERT P.No.312, Synovial Joints 4th Line]
197. **(3)** (12th NCERT Page no.233, (i), concept)
198. **(3)** (NCERT 12th page no 59, para 2)
199. **(1)** (NCERT XI Page No. 333, 6th line of 2nd paragraph)
200. **(4)** (NCERT 11th page no 114, para 3)