R ANSWER KEY & SOLUTION KEY FINAL ROUND - 18 (PCB) Dt.28.04.2024

Section - A (Physics)

01. **(3)** The direction of oscillations of E and B fields are perpendicular to each other as well as to the direction of propagation. So, electromagnetic waves are transverse in nature.

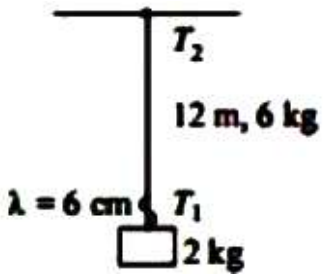
02. **(2)** If the earth shrinks suddenly, its radius R would decrease and $I = \frac{2}{5}MR^2$ would decrease. Thus, ω increase to keep angular momentum constant. Hence the length of the day will decrease.
In a uniform gravitational field COM and COG coincides.

03. **(3)** Since Range on horizontal plane is
$R = \frac{u^2 \sin 2\theta}{g}$
So it is max when $\sin 2\theta = 1 \Rightarrow \theta = \frac{\pi}{4}$.

04. **(1)** K.E. $= h\nu - h\nu_0 = eV_0$ (V_0 = cut off voltage)
$\Rightarrow V_0 = \frac{h}{e}(8.2\times10^{14} - 3.3\times10^{14})$
$= \frac{6.6\times10^{-34}\times4.9\times10^{14}}{1.6\times10^{-19}} \approx 2V.$

05. **(3)** Given, $_L : V_C : V_R :: 1:2:3$
$V = 100$ V, $V_R = ?$
As we know, $V = \sqrt{V_R^2 + (V_L - V_C)^2}$
$(100)^2 = (3x)^2 + (2x - x)^2 \Rightarrow x = 10\sqrt{10}$
So $V_R = 3x = 30\sqrt{10} \approx 90V.$

06. **(3)**



Using, $V = f\lambda$
$\frac{V_1}{\lambda_1} = \frac{V_2}{\lambda_2} \Rightarrow \lambda_2 = \frac{V_2}{V_1}\lambda_1$
So, $\lambda_2 = \sqrt{\frac{T_2}{T_1}}\lambda_1 \Rightarrow \lambda_2 = \sqrt{\frac{8g}{2g}}6 = 12cm.$

07. **(2)** Here $u = 56$ m/s
Let θ the angle of projection with the horizontal to have maximum range, with maximum height = 40m
Maximum height, $H = \frac{u^2 \sin^2\theta}{2g}$
$40 = \frac{(56)^2 \sin^2\theta}{2\times9.8}$
$\Rightarrow \sin^2\theta = \frac{2\times9.8\times40}{(56)^2} = \frac{1}{4}$
$\Rightarrow \sin\theta = \frac{1}{2} \quad \Rightarrow \theta = \sin^{-1}\frac{1}{2} = 30°.$

08. **(2)** For path overtone, $n = \frac{(p+1)}{2l}\sqrt{\frac{T}{\pi r^2 \rho}}$.

09. **(4)** In isobaric expansion, work done is maximum.

10. **(4)** $E = \frac{50}{100}IAt = \frac{1}{2}\times20\times20\times60 = 12\times10^3 J.$

11. **(4)** $A = 60°$ (for equilateral prism)
$i = i' = \frac{3}{4}\times60 = 45°$
So $\delta = i + i' - A = 45° + 45° - 60 = 30°.$

12. **(1)** $Y = \frac{F/A}{\Delta l/l} \Rightarrow \therefore \Delta l = \frac{Fl}{AY}$
Substituting the values
$\Delta l = \frac{(1.5\times10^4)(1.0)}{(1.5\times10^{-4})(2.0\times10^{11})} = 0.5\times10^{-3}m.$
or $\Delta l = 0.5mm.$

13. **(3)** $\rightarrow f$ remains same

$I \propto d^2$

New intensity of image $I' = I - \frac{I}{4} = \frac{3I}{4}$.

14. **(2)** Pentavalent is called donor.

15. **(2)** When $h = \frac{H}{2}$, Range is maximum.

16. **(3)** For photo electric emission incident light energy

$$E = \frac{hc}{2\lambda} \geq \frac{hc}{\lambda_0}$$

$$\Rightarrow \frac{1}{2\lambda} \geq \frac{1}{\lambda_0} \Rightarrow 2\lambda \leq \lambda_0 \Rightarrow \lambda \leq \frac{\lambda_0}{2}$$

Where λ_0 = threshold wavelength.

17. **(2)** The electric field inside the emptied space is non-zero and uniform.

18. **(2)** Conceptual.

19. **(4)** Just after closing switch Current through inductor is zero. Because of its property.

20. **(3)** $n = \frac{V}{2(l_2 - l_1)} = \frac{340}{2(0.84 - 0.50)} = 500 Hz.$

21. **(1)** If incident light is white light, then central fringe is white while all other fringes are coloured

22. **(4)** Diffraction effect can be observed in both sound as well as light waves.

23. **(1)** $f = \frac{100}{16} = 6.25 cm.$

For maximum magnification final image should be at D = 25 cm.

So $\frac{1}{f} = \frac{1}{V} - \frac{1}{u} \Rightarrow \frac{1}{6.25} = \frac{-1}{25} - \frac{1}{u} \Rightarrow u = -5 cm.$

24. **(1)** We know that $\frac{W_{AB}}{q} = V_B - V_A$

$$\therefore V_B - V_A = \frac{2J}{20C} = 0.1 J / C = 0.1 V.$$

25. **(1)** Latent heat of fusion = 80 cal/gm
Latent heat of vaporisation = 540 cal/gm.

26. **(2)** v = 36 km/hr = 10 m/s.
Applying conservation of momentum, we get ;
2 × 10 = (2 + 3) V or V = 4 m/s

Loss in K.E. $= \frac{1}{2} \times 2 \times (10)^2 - \frac{1}{2} \times 5 \times (4)^2$

$= 100 - 40 = 60 J.$

27. **(4)** $K \propto T$

28. **(4)** $f = \frac{R}{2} \Rightarrow R = 40 cm.$

29. **(2)** $\alpha t^2 = 1 \Rightarrow \alpha = \frac{1}{t^2} = [T^{-2}].$

30. **(4)** As electric field is conservative field so work done along close path is zero.

31. **(4)** Since initial and final states are same, hence ΔU is same in all process. Area under the curve is maximum in A and minimum in C. Hence, work done will be minimum in C and Q will be maximum in A.

32. **(1)** In a progressive wave, at a point, particle performs oscillatory motion.

33. **(2)** As

$T = 2\pi\sqrt{\frac{l_{eff}}{g}}$, So as girl stand up $l_{eff} \downarrow \Rightarrow T \downarrow$.

34. **(1)** $E = \frac{V}{l} = \frac{10}{10} = 1 V / m.$

35. **(4)** Velocity after the collision

$= \frac{10 \times 10 + 5 \times 0}{15} = \frac{100}{15} = \frac{20}{3}$ m/s.

Section - B (Physics)

36. **(2)** Let the temperature of the star be T. Then

$$\frac{dQ}{dt} = eA\sigma T^4 \quad \{e = 1\}$$

$$Q = (4\pi R^2)\sigma T^4$$

$$T = \left(\frac{Q}{4\pi R^2 \sigma}\right)^{1/4}.$$

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

Given, d = 0.4 mm = 0.04 cm, D = 200 cm

β = 2 mm = 0.2 cm

$$\therefore 0.2 = \frac{200 \times \lambda}{0.04}$$

$$\Rightarrow \lambda = 400 nm.$$

38. **(4)** $\omega_{A/B} = \frac{3\pi}{2}$ rad/s

$$\Delta\theta = 2\pi - \frac{\pi}{3}$$

$\Rightarrow \Delta\theta = \frac{5\pi}{3}$

Then time $= \frac{\Delta\theta}{\omega_{A/B}} = \frac{5\pi/3}{3\pi/2} = \frac{10}{9} s.$

39. **(4)** $W = K_f - K_i$

$W = \frac{1}{2}mv^2 = \frac{1}{2}ma^2t^2$ where $a = \frac{v}{t_1}$

40. **(1)** (a) Heat current $H = \frac{\Delta\theta}{R} \Rightarrow \frac{H_P}{H_S} = \frac{R_S}{R_P}$

In first case :

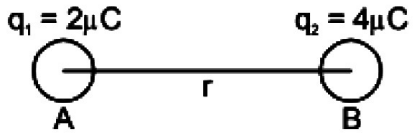
$R_S = R_1 + R_2 = \frac{1}{(3K)A} + \frac{1}{KA} = \frac{4}{3}\frac{l}{KA}$

In second case :

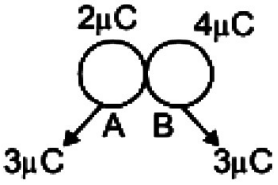
$R_P = \frac{R_1R_2}{R_1+R_2} = \frac{\frac{1}{(3K)A}\times\frac{1}{KA}}{\frac{1}{(3K)A}+\frac{1}{KA}} = \frac{l}{4KA}$

$\therefore \frac{H_P}{H_S} = \frac{4l/3KA}{l/4KA} = \frac{16}{3}.$

41. **(2)** Without loss in generally consider



$F_1 = \frac{K2\mu C \times 4\mu C}{r^2}$ .....(i)



$F_2 = \frac{K3\mu C \times 3\mu C}{(1)^2}$ .....(ii)

$F_2 \propto 9, \quad F_1 \propto 8$

$\therefore F_2 > F_1.$

42. **(3)** Time to complete 1/4th oscillation is $\frac{T}{4}$s. Time to complete 1/8th vibration from extreme position is obtained from

$y = \frac{a}{2} = a\cos\frac{2\pi}{T}t$ or $t = \frac{T}{6}$s

So time to complete 3/8th oscillation $= \frac{T}{4} + \frac{T}{6} = \frac{5T}{12}.$

43. **(4)** Work done by magnetic force is zero. Because it always acts perpendicular to velocity.

44. **(2)** $\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2}$ $\left(\because R = \frac{\rho L}{A} = \frac{L}{\sigma A}\right)$

$\frac{\sigma 2A}{L} = \frac{\sigma_1 A}{L} + \frac{\sigma_2 A}{L}$

Effective specific conductance, $\sigma = \frac{\sigma_1 + \sigma_2}{2}.$

45. **(1)** The resistance connected to voltmeter in series to increase its range from 5V to 30V is,

$R = \left(\frac{V_2 - V_1}{V_1}\right)G_V.$

Here G_V is the resistance of voltmeter

$\Rightarrow R = \left(\frac{30-5}{5}\right)\times 200 = 1000\Omega = 1k\Omega.$

46. **(2)** Given, $V = 2\sqrt{x}.$

We know that $\frac{dX}{dt} = V$

$\therefore \frac{dX}{dt} = 2\sqrt{X} \Rightarrow \int_0^t 2dt = \int_0^x \frac{dx}{\sqrt{x}}$

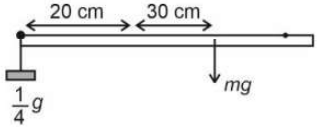
$\left.\frac{X^{\frac{1}{2}+1}}{-\frac{1}{2}+1}\right|_0^X = 2t \Rightarrow 2(\sqrt{X} - 0) = 2t$

$\sqrt{X} = t \Rightarrow X = t^2$

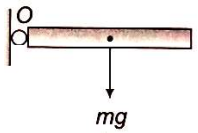
$v = \frac{dX}{dt} = \frac{d}{dt}t^2$

$\therefore v = 2t.$

47. **(2)** $g\frac{1}{4}\times 20 = mg \times 30$



48. **(2)** $\alpha = \frac{\tau_0}{I_0}$



$\frac{mgL/2}{mL^2/3} = \frac{3g}{2L}$.

49. **(4)** For straight path $qE = qvB \Rightarrow v = \frac{E}{B}$

$R = \frac{m}{qB}\left(\frac{E}{B}\right) \Rightarrow m = q\frac{B^2R}{E}$.

50. **(1)** $Y = A + B \Rightarrow OR$ gate

$Y = \overline{A} + \overline{B} = \overline{AB} \Rightarrow NAND$ gate

$Y = \overline{\overline{A} + \overline{B}} = \overline{\overline{AB}} = AB \Rightarrow AND$ gate

$Y = \overline{A + B} \Rightarrow NOR$ gate.

Section - A (Chemistry)

51. **(1)** In corresponding compound NH_3, bond angle = 107° whereas in PH_3, bond angle ≈ 90°.

This is due to the reason that for the same surrounding atom as the electronegativity of central atom decreases and also decrease in the bond pair-bond pair repulsion, bond angle decrease in the bond pair-bond pair repulsion, bond angle decreases.

52. **(3)** Bond strength depends on the extent of overlapping. Maximum overlapping is observed in the case of p-orbitals.

53. **(2)** At equilibrium, rate of forward reaction is equal to rate of backward reaction.

54. **(1)** Oxidation is a process in which hydrogen is removed or oxygen is added or loss of electron takes place or oxidation number increases.

55. **(4)** SN^1 mechanism

56. **(1)** AgCN - dominant covalent character

57. **(2)** Orthoboric acid is weak monobasic acid with $K_a = 1.0 \times 10^{-9}$. It does not act as protonic acid (i.e., proton donor) but behaves as Lewis acid by accepting a pair of electrons from OH^- ion.

$B(OH)_3 + 2H - O - H \rightarrow [B(OH)_4]^- + H_3O^+$

58. **(3)** Since bond energy for Cl_2 is maximum, it must have the strongest bond. F–F bond is weaker than Cl–Cl bond because of inter-electronic repulsions takeing place in small sized fluorine.

59. **(4)** $\overset{x}{N_3}\overset{+1}{H}$ i.e., $3(x) + 1(+1) = 0 \Rightarrow = -\frac{1}{3}$.

60. **(3)** The salt bridge possesses the electrolyte having nearly same ionic mobilities of its cation and anion.

61. **(4)** 4 > 2 > 1 > 3 Reactivity ∝ EDG

62. **(3)** Nucleophile always attack on electron deficient site. Presence of electron withdrawing groups such as NO_2, CHO etc., decreases the electron density on benzene nucleus, hence such groups activate the ring towards nucleophilic attack.

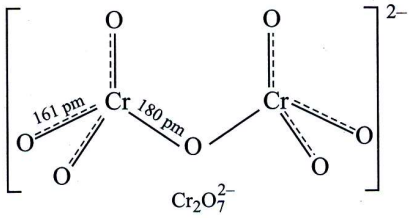
While presence of electron releasing groups such as –R or –OR increases the electron density, thsu deactivates the benzene nucleus toward nucleophilic attack.

Hence, NO_2 group activates the ring more than –Cl towards nucleophilic attack.

Thus, 

reacts (rapidly) with nucleophiles.

63. **(2)**



Six Cr–O bonds have some partial double bond character while two Cr–O bonds are purely single bond.

64. **(3)** Oxidation state of Cr in $[Cr(NH_3)_6]Cl_3 = +3$

EAN = Electrons on Cr^{3+} + Electrons from 6 NH_3 = 21 + 12 = 33

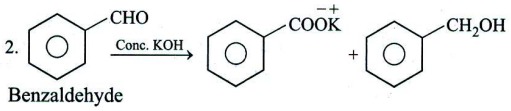
65. **(4)** Unit of rate constant $= \left(\frac{\text{litre}}{\text{mol}}\right)^{n-1} s^{-1}$

If n = 3, then the unit of rate constant is $mol^{-2} L^2 s^{-1}$.

Therefore, the order of reaction is three.

66. **(4)** Both Statement I and Statement II are true.

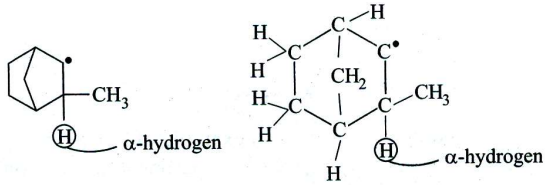
67. **(1)** Aldehyde having no α -hydrogen undergoes Cannizzaro reaction in presence of base

2. 

Benzaldehyde

68. **(3)** Hyperconjugation occurs through the H-atoms present on the carbon atom next to the double bond/radical/cargonium ion, i.e. α-hydrogen atoms. There is no α-H in the structures I and II.

So, hyperconjugation occurs in only III structure, i.e.

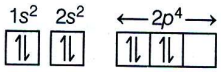


69. **(2)** Geometrical isomerism is shown by square planar and octahedral complexes.

70. **(2)**

$K_2Fe[Fe(CN)_6]$–white]

71. **(3)** Among the given statement, C and D are incorrect whereas A, B are correct. The correct form of C and D are:

- If the electronic structure of oxygen atom is written as  it would violate Hund's rule.
- The increasing order of energy of subshells for multielectron atom is 6s, 4f, 5d, 6p.

72. **(2)** The correct match is

A-IV, B-I, C-II, D-III

73. **(4)** The two most common pyrimidines of DNA are cytosine (C) and thymine (T) and the two most common purines of DNA are adenine (A) and guanine (G).

74. **(1)** Neutral $FeCl_3$ test

75. **(1)** $\Delta x \times \Delta p = \frac{h}{4\pi}$ (Heisenberg's uncertainty principle)

$$\Rightarrow \Delta x = \frac{6.62\times10^{-34}}{4\times3.14\times10^{-5}} = 5.27\times10^{-30}\,m$$

76. **(3)** Valency of metal = +2

Hence, formula of metal chloride will be MCl_2.

77. **(1)** $\bar{\upsilon}_{max} = \frac{1}{\lambda_{min}} = R_H Z^2\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$

for $Z = 1, n_1 = 1, n_2 = \infty, \frac{1}{x} = R_H$

$$\bar{\upsilon} = \frac{1}{\lambda_{max}} = R_H Z^2\left[\frac{1}{2^2} - \frac{1}{3^2}\right] = \frac{1\times4}{x}\left[\frac{5}{36}\right]$$

$$\lambda_{max} = \frac{9x}{5}.$$

78. **(4)** EWG increases acidic strength

79. **(3)** DIBAL - H reduces – CN group into aldehyde group.

80. **(1)** In general, electron affinity decreases down the group but electron affinity for chlorine is more than fluorine, and similarly electron affinity for sulphur is more than oxygen, because in F and O, due to small size of the atom, the electrons are already crowded. Entry of one more electron results in more repulsions, which leads to absorption of some energy, so the energy released is less than the expected.

81. **(1)** $1s^2, 2s^2, 2p^6, 3s^2$ - in third transition, electron is to be removed from stable configuration.

82. **(2)** Evaporation of water is an endothermic process.

83. **(4)** $XeF_{6(g)} + H_2O_{(g)} \rightleftharpoons XeOF_{4(g)} + 2HF_{(g)}$ ...(i)

$XeO_{4(g)} + XeF_{6(g)} \rightleftharpoons XeOF_{4(g)} + XeO_3F_{2(g)}$ ...(ii)

by reversing the equation (i) and adding (ii)

$XeO_{4(g)} + 2HF_{(g)} \rightleftharpoons XeO_3F_{2(g)} + H_2O_{(g)}$

Thus, $K = \frac{1}{K_1} \times K_2 = \frac{K_2}{K_1}$.

84. **(4)** Resonance energy

85. **(4)** Steam distillation

Section - B (Chemistry)

86. **(4)** Among the given statements, only C, D and E are correct while the statements A and B are incorrect.

Their correct form is:

- The complex $[Ni(Cl_4)]^{2-}$ is an outer orbital complex.
- The complex $[Mn(CN)_6]^{4-}$ is an inner orbital complex.

87. **(3)** Mercurous chloride, Hg_2Cl_2 is used in calomel electrode.

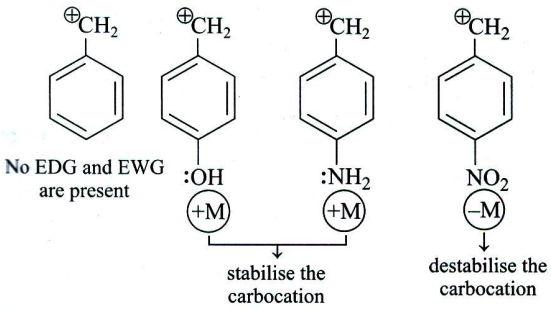
88. **(1)** $C = \frac{n}{V} = \frac{P}{RT} \quad \therefore \frac{dC}{dt} = \frac{1}{V}\left(\frac{dn}{dt}\right) = \frac{1}{RT}\left(\frac{dP}{dt}\right)$

89. **(3)** Among the given compounds only I and II will give a yellow precipitate with iodine and alkali.

2-hydroxypropane $\left(\begin{matrix}CH_3CH-CH_3\\ |\\ OH\end{matrix}\right)$ contains the $CH_3CH(OH)$ and CH_3CO- is present in acetophenone $\left(\begin{matrix}O\\ ||\\ C_6H_5-CCH_3\end{matrix}\right)$ so, both of these compounds will gives, iodoform test, i.e. form iodoform on reaction with I_2 and alkali.

90. **(2)** The correct order of stability of given cations is

R > P > Q > S



91. **(2)** As coal has 80% carbon in weight weight of carbon in 10 kg coal

$= 10 \times \frac{80}{100} = 8 \text{ kg} = 8000 \text{ g}$

As 60% of C is converted to CO_2 thus wt. of C converted into $CO_2 = 8000 \times \frac{60}{100} = 4800$ g and 40% of C to CO thus wt. of C converted into CO $= 8000 \times \frac{40}{100} = 3200$ g.

12 g (1 mole) of C on combustion liberates = 394 kJ of heat

$\therefore$ 4800 g of C on combustion liberates

$= \frac{394 \times 4800}{12} \text{kJ} = 157600 \text{ kJ}$ ...(i)

12 g (1 mole) of C on combustion liberates = 111 kJ heat

$\therefore$ 3200 g of C on combustion liberates

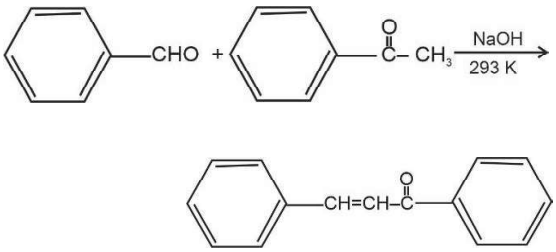
$= \frac{111 \times 3200}{12} \text{kJ}$

$= 29600$ kJ

Total heat liberates would be

$= 157600 + 29600 = 187200$ kJ

92. **(1)**



93. **(3)** $SN^1 \propto$ stability of carbocation

94. **(1)** The correct match is

A-III, B-IV, C-II, D-I

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

96. **(3)** $\rho = 1.25 \text{ g mL}^{-1}$, $M_{NaNO_3} = 85 \text{ g mol}^{-1}$,

Molarity = 1 M $\frac{1}{m} = \frac{\rho}{M} - \frac{M_{NaNO_3}}{1000}$

$\Rightarrow \frac{1}{m} = \frac{1.25}{1} - \frac{85}{1000} = 1.25 - 0.085 = 1.165$

$m = 0.858$.

97. **(1)** Suppose weight of $N_2O_4 = x$ g

Suppose weight of $NO_2 = 100 - x$ g

Total no. of moles $= \frac{x}{92} + \frac{100-x}{46}$

But molecular mass of the mixture = 2 × 38.3 = 76.6

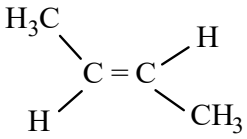
$\Rightarrow$ Total no. of moles in the mixture $= \frac{100}{76.6} = 1.3$

$$\Rightarrow 1.3 = \frac{x}{92} + \frac{100-x}{46} \Rightarrow x = 80 \text{ and } 100-x = 20$$

$$\Rightarrow \text{No. of moles } (NO_2) = \frac{20}{46} = 0.434$$

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

99. **(4)** 'A' is $CH_3 - C \equiv C - C_2H_5$ B is



100. **(4)** Green $Cr_2(SO_4)_3$ is formed

Section - A (Biology : Botany)

101. **(3)** (NCERT 12th, 110, Figure 6.11)
102. **(3)** (NCERT 12th, Pg 97, based on Chargaff's rule)
103. **(4)** [NCERT 11th Page 249, point 15.4.3.3]
104. **(1)** (NCERT 11th Page no.32 to 33, conceptual.)
105. **(3)** (NCERT 12th Page no.245 3rd para 1st line,concept.)
106. **(4)** (NCERT 11th para 8.4/ Page no.127)
107. **(3)** [NCERT 11th, Page 247, Point 15.4.2]
108. **(3)** (NCERT 11th Pg.233, Figure 14.4)
109. **(2)** (NCERT 12th, Pg 80, based on Law of Independent Assortment)
110. **(3)** (NCERT 12th, Pg 111, para 2 , line 4 based)
111. **(1)** (NCERT 12th, Pg 91, Thalassemia)
112. **(4)** (NCERT 12th, Pg. 114, TRANSLATION- 2nd line)
113. **(1)** (NCERT 12th Page no 22, 1st paragraph, Conceptual)
114. **(2)** (NCERT 11th–page no. 211 – 13.5 Line 12 to 14 - concept based)
115. **(2)** (NCERT 12th, Pg 73, Figure 5.4 based on monohybrid cross)
116. **(1)** (NCERT 11th, Page no- 20, Paragraph- 2.2.1, Line no- 1-10)
117. **(2)** (NCERT 11th Page no- 8, 2nd paragraph, Line 3 and 4)
118. **(1)** (NCERT 11th para 10.2.5 / Page no. 166)
119. **(3)** (NCERT 12th, Pg 80, Para 1)
120. **(3)** (NCERT 12th, Mixed concept of cell div, Genetics, and Oogenesis)
121. **(4)** (NCERT 12th, Pg 112, Point (ii))
122. **(3)** [NCERT 11th Newly added family]
123. **(4)** (NCERT 11th page no. 213, point (a), page no. 214 – point (b) and (c) 13.6 -concept based)
124. **(3)** (NCERT 11th para 8.510 / Page no.139)
125. **(2)** (NCERT 11th para 8.5.4 / Page no.134)
126. **(4)** (NCERT 11th page no.35 to 36, conceptual)
127. **(3)** [NCERT 11th Newly added family]
128. **(4)** (NCERT 11th Pg.232, 1st Para, 14th line)
129. **(1)** (NCERT 11th para 8.510 / Page no.139)
130. **(4)** [NCERT 11th Page No. 68; Sub-topic 5.2.1]
131. **(4)** [NCERT 11th Page no. 88, First paragraph]
132. **(1)** (NCERT 12th, Pg 111, based on Permutation combination (Last 4th line))
133. **(3)** (NCERT 12th page no 29, Last paragraph, Line no 38-40)
134. **(2)** (NCERT 11th page no 20, line no- 12-14)
135. **(4)** (NCERT 11th, Page no-24, Paragraph- 2.3.3, Line no-12,13)

Section - B (Biology : Botany)

136. **(1)** (NCERT 11th, Page no- 19, 1st paragraph, Line no-1-7)
137. **(3)** (NCERT 12th, Pg 74, Based on test cross)
138. **(4)** (NCERT 12th no-29, 1st paragraph, Last line)
139. **(2)** (NCERT 11th page no. 222 – fig. 13.10 - concept based)
140. **(4)** (NCERT 11th Page no- 7, 2nd pargraph, Line no- 34 and 35)
141. **(4)** [NCERT 11th, Page no. 88, Point 6.2.1 (Line no.- 01-06)]
142. **(4)** [NCERT 11th, Page 248, Second paragraph]
143. **(3)** (NCERT 11th Pg.229, 14.1)
144. **(4)** (NCERT 11th, page no.29, conceptual)
145. **(3)** (NCERT 11th Page no.30 3.1,2nd and 3rd para)
146. **(4)** (NCERT 12th Page no.249 fig.14.4(d) concept based)
147. **(4)** (NCERT 11th para 10.1.1 conceptual based / Page no.164)

148. **(4)** (NCERT 12th Page no- 23, 2nd Paragraph, Line no- 20 and 21)

149. **(2)** (NCERT 11th para 10.4.1/ Page no. 168)

150. **(3)** [NCERT 11th Page No. 80; Sub-topic 5.9.2]

Section - A (Biology : Zoology)

151. **(4)** (NCERT 11th; Page No. 335, 2nd paragraph)

152. **(2)** [NCERT 11th p310; 1st Line]

153. **(3)** (NCERT 12th page 50, menstrual cycle)

154. **(2)** (NCERT 12th page 60, para 1)

155. **(3)** (NCERT 11th; Page No. 294; 6th line of 3rd paragraph)

156. **(3)** [NCERT 11th P.No.306, 1st para]

157. **(2)** [NCERT 11th P.No.320, Meninges Of Brain]

158. **(4)** (NCERT 12th Page No - 151 fig. 8.4)

159. **(1)** [NCERT 11th P.No.303, Last 2 Para]

160. **(3)** (NCERT 11th page 114, para 3)

161. **(2)** (NCERT 11th page no113, para 1)

162. **(1)** (NCERT 11th page no113, para 1)

163. **(2)** (NCERT 11th Page No - 190 Regulation of respiration)

164. **(2)** [NCERT 11th P.No.321, Forebrain , Midbrain And Hind brain Mixed]

165. **(1)** (NCERT 12th Page No - 159 Cocaine)

166. **(1)** (NCERT 11th Page No. 53; phylum - mollusca)

167. **(2)** (NCERT 11th Page No. 52; 10th line of phylum annelida)

168. **(3)** [NCERT 12th P.No.211, Last para]

169. **(4)** [NCERT 12th P.No.195, Restriction Enzymes 1st para]

170. **(2)** [NCERT 12th P.No.204, Fig 11.7]

171. **(3)** (NCERT 11th Page No - 189 Transport of O_2)

172. **(2)** (NCERT 12th, Evolution, Whole chapter knowledge based)

173. **(2)** (NCERT 12th para10.1 / Page no. 181)

174. **(4)** (NCERT 12th,Page no.266 to 267)

175. **(4)** (NCERT 12th Page no.268 last 2nd para, summary)

176. **(3)** (NCERT 11th, Page no- 149, Paragraph- 9.6, Line no- 10-14)

177. **(2)** (NCERT 12th Page no- 127, 2nd paragraph, line no- 18,19)

178. **(4)** (NCERT 11th Page No - 194 formed elements)

179. **(3)** (NCERT 12th Page No - 159 Cannabinoids)

180. **(2)** (NCERT 12th Page No - 161 Addiction & dependence)

181. **(3)** (NCERT 11th page 114, para2)

182. **(1)** (NCERT 12th page 62, 4.3 MTP)

183. **(4)** (NCERT 11th, Page no-143, Table- 9.1)

184. **(1)** (NCERT 12th page no-127, 1st paragraph, line no-12)

185. **(1)** (NCERT 11th, Page No. 337, Glucorticoids)

Section - B (Biology : Zoology)

186. **(2)** (NCERT 11th Mixed question of excretory and chemical Page No.294 and 337)

187. **(3)** (NCERT 12th, Page No - 196 Coagulation of blood)

188. **(3)** (NCERT 12th,Page No. 132)

189. **(4)** (NCERT 12th, p.no. 56)

190. **(3)** (NCERT 12th , page 58,61 para 3)

191. **(1)** (NCERT 11th, Page no- 148, Paragraph- 9.5, Line no- 11-14)

192. **(2)** [NCERT 12th P.No.193, Last para]

193. **(2)** (NCERT 11th Page No. 56; Class- chondrichthyes)

194. **(4)** (NCERT 11th, Page no- 159, Paragraph- 9.12.6, Line no- 9-11)

195. **(3)** (NCERT 12th page no. 231 (ii),1st Para)

196. **(4)** [NCERT 11th P.No.319, 2nd para Applied]

197. **(4)** [NCERT 11th P.No.309, 310,311]

198. **(2)** (NCERT 12th Page no- 135, Paragraph- 7.6, line no- 33 and 34)

199. **(4)** (NCERT 12th para10 introduction / Page no. 180)

200. **(2)** (NCERT 12th, Page no.230 to 231)