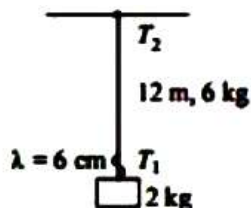


## S ANSWER KEY & SOLUTION KEY FINAL ROUND - 18 (PCB) Dt.28.04.2024

### Section - A (Physics)

01. (3)



Using,  $V = f\lambda$

$$\frac{V_1}{\lambda_1} = \frac{V_2}{\lambda_2} \Rightarrow \lambda_2 = \frac{V_2}{V_1} \lambda_1$$

$$\text{So, } \lambda_2 = \sqrt{\frac{T_2}{T_1}} \lambda_1 \Rightarrow \lambda_2 = \sqrt{\frac{8g}{2g}} \cdot 6 = 12 \text{ cm.}$$

02. (2) Here  $u = 56 \text{ m/s}$

Let  $\theta$  the angle of projection with the horizontal to have maximum range, with maximum height = 40m

$$\text{Maximum height, } H = \frac{u^2 \sin^2 \theta}{2g}$$

$$40 = \frac{(56)^2 \sin^2 \theta}{2 \times 9.8}$$

$$\Rightarrow \sin^2 \theta = \frac{2 \times 9.8 \times 40}{(56)^2} = \frac{1}{4}$$

$$\Rightarrow \sin \theta = \frac{1}{2} \Rightarrow \theta = \sin^{-1} \frac{1}{2} = 30^\circ.$$

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

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

05. (4)  $E = \frac{50}{100} IAt = \frac{1}{2} \times 20 \times 20 \times 60 = 12 \times 10^3 \text{ J.}$

06. (4)  $A = 60^\circ$  (for equilateral prism)

$$i = i' = \frac{3}{4} \times 60 = 45^\circ$$

$$\text{So } \delta = i + i' - A = 45^\circ + 45^\circ - 60 = 30^\circ.$$

07. (1)  $Y = \frac{F/A}{\Delta l/l} \Rightarrow \therefore \Delta l = \frac{Fl}{AY}$

Substituting the values

$$\Delta l = \frac{(1.5 \times 10^4)(1.0)}{(1.5 \times 10^{-4})(2.0 \times 10^{11})} = 0.5 \times 10^{-3} \text{ m.}$$

$$\text{or } \Delta l = 0.5 \text{ mm.}$$

08. (3)  $\rightarrow f$  remains same

$$I \propto d^2$$

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

09. (2) Pentavalent is called donor.

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

11. (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  $\lambda_0$  = threshold wavelength.

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

13. (2) Conceptual.

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

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

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

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

18. (1)  $f = \frac{100}{16} = 6.25 \text{ cm.}$

For maximum magnification final image should be at  $D = 25 \text{ cm.}$

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

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

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

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

21. (2)  $v = 36 \text{ km/hr} = 10 \text{ m/s}.$   
Applying conservation of momentum, we get ;  
 $2 \times 10 = (2 + 3) V$  or  $V = 4 \text{ m/s}$

Loss in K.E. =  $\frac{1}{2} \times 2 \times (10)^2 - \frac{1}{2} \times 5 \times (4)^2$   
 $= 100 - 40 = 60J.$

22. (4)  $K \propto T$

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

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

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

26. (4) Since initial and final states are same, hence  $\Delta U$  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.

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

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

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

30. (4) Velocity after the collision

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

31. (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.

32. (2) If the earth shrinks suddenly, its radius R would decrease and  $I = \frac{2}{5}MR^2$  would decrease. Thus,

(i) increase to keep angular momentum constant.  
Hence the length of the day will decrease.

In a uniform gravitational field COM and COG coincides.

33. (3) Since Range on horizontal plane is

$R = \frac{u^2 \sin 2\theta}{g}$

So it is max when  $\sin 2\theta = 1 \Rightarrow \theta = \frac{\pi}{4}.$

34. (1) K.E. =  $hv - hv_0 = eV_0$  ( $V_0 =$  cut off voltage)

$\Rightarrow V_0 = \frac{h}{e}(8.2 \times 10^{14} - 3.3 \times 10^{14})$   
 $= \frac{6.6 \times 10^{-34} \times 4.9 \times 10^{14}}{1.6 \times 10^{-19}} \approx 2V.$

35. (3) Given,  $V_L : V_C : V_R :: 1 : 2 : 3$

$V = 100 \text{ V}, V_R = ?$

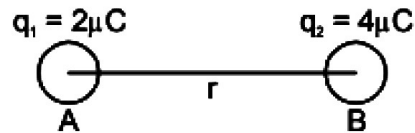
As we know,  $V = \sqrt{V_R^2 + (V_L - V_C)^2}$

$(100)^2 = (3x)^2 + (2x - x)^2 \Rightarrow x = 10\sqrt{10}$

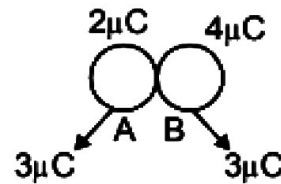
So  $V_R = 3x = 30\sqrt{10} \approx 90V.$

**Section - B (Physics)**

36. (2) Without loss in generally consider



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



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

$F_2 \propto 9, F_1 \propto 8$

$\therefore F_2 > F_1.$

37. (3) Time to complete 1/4<sup>th</sup> oscillation is  $\frac{T}{4}$  s. Time to complete 1/8<sup>th</sup> vibration from extreme position

is obtained from

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

So time to complete  $3/8^{\text{th}}$  oscillation

$$= \frac{T}{4} + \frac{T}{6} = \frac{5T}{12}$$

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

39. (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,  $\sigma = \frac{\sigma_1 + \sigma_2}{2}$ .

40. (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

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

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

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

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

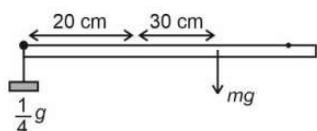
$$\left. \frac{X^{\frac{1}{2}+1}}{-\frac{1}{2}+1} \right|_0^x = 2t \Rightarrow 2(\sqrt{X} - 0) = 2t$$

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

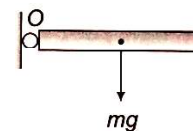
$$v = \frac{dX}{dt} = \frac{d}{dt} t^2$$

$$\therefore v = 2t$$

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



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



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

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

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

45. (1)  $Y = A + B \Rightarrow OR \text{ gate}$

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

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

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

46. (2) Let the temperature of the star be  $T$ . Then

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

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

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

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

Given,  $d = 0.4 \text{ mm} = 0.04 \text{ cm}$ ,  $D = 200 \text{ cm}$

$$\beta = 2 \text{ mm} = 0.2 \text{ cm}$$

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

$$\Rightarrow \lambda = 400 \text{ nm.}$$

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

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

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

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

49. (4)  $W = K_f - K_i$

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

50. (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 :

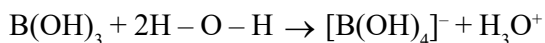
$$R_P = \frac{R_1 R_2}{R_1 + R_2} = \frac{\frac{1}{(3K)A} \times \frac{1}{KA}}{\frac{1}{(3K)A} + \frac{1}{KA}} = \frac{l}{4KA}$$

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

### Section - A (Chemistry)

51. (1) AgCN - dominant covalent character

52. (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  $\text{OH}^-$  ion.



53. (3) Since bond energy for  $\text{Cl}_2$  is maximum, it must have the strongest bond. F-F bond is weaker than Cl-Cl bond because of inter-electronic repulsions taking place in small sized fluorine.

54. (4)  $\sum x + 1$  i.e.,  $3(x) + 1(+1) = 0 \Rightarrow x = -\frac{1}{3}$ .

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

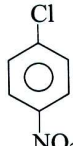
56. (4)  $4 > 2 > 1 > 3$  Reactivity  $\propto$  EDG

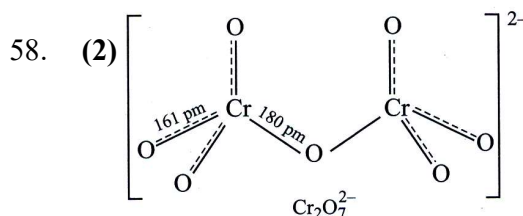
57. (3) Nucleophile always attack on electron deficient site. Presence of electron withdrawing groups such as  $\text{NO}_2$ , CHO etc., decreases the electron density on benzene nucleus, hence such groups activate the ring towards nucleophilic attack.

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

Hence,  $\text{NO}_2$  group activates the ring more than -

Cl towards nucleophilic attack.

Thus,  reacts (rapidly) with nucleophiles.



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

59. (3) Oxidation state of Cr in  $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3 = +3$

EAN = Electrons on  $\text{Cr}^{3+}$  + Electrons from 6  $\text{NH}_3$   
 $= 21 + 12 = 33$

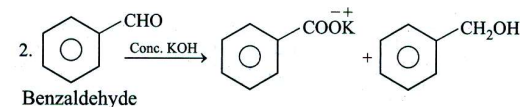
60. (4) Unit of rate constant =  $\left(\frac{\text{litre}}{\text{mol}}\right)^{n-1} \text{s}^{-1}$

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

Therefore, the order of reaction is three.

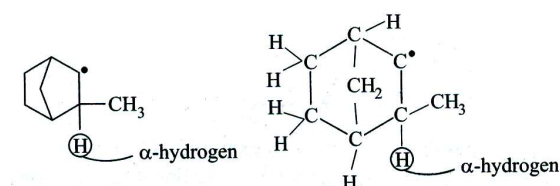
61. (4) Both Statement I and Statement II are true.

62. (1) Aldehyde having no  $\alpha$ -hydrogen undergoes Cannizzaro reaction in presence of base



63. (3) Hyperconjugation occurs through the H-atoms present on the carbon atom next to the double bond/radical/carbonium ion, i.e.  $\alpha$ -hydrogen atoms. There is no  $\alpha$ -H in the structures I and II.

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



64. (2) Geometrical isomerism is shown by square planar and octahedral complexes.
65. (2)  
 $K_2Fe[Fe(CN)_6]$  - white]
66. (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  $\begin{array}{|c|c|} \hline \uparrow\downarrow & \uparrow\downarrow \\ \hline \end{array}$   $\begin{array}{|c|c|c|} \hline \leftarrow 2p^4 \rightarrow \\ \hline \end{array}$  it would violate Hund's rule.
  - The increasing order of energy of subshells for multielectron atom is 6s, 4f, 5d, 6p.
67. (2) The correct match is  
 A-IV, B-I, C-II, D-III
68. (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).
69. (1) Neutral  $FeCl_3$  test
70. (1)  $\Delta x \times \Delta p = \frac{h}{4\pi}$  (Heisenberg's uncertainty principle)  

$$\Rightarrow \Delta x = \frac{6.62 \times 10^{-34}}{4 \times 3.14 \times 10^{-5}} = 5.27 \times 10^{-30} \text{ m}$$
71. (3) Valency of metal = +2  
 Hence, formula of metal chloride will be  $MCl_2$ .
72. (1)  $\bar{\nu}_{\max} = \frac{1}{\lambda_{\min}} = R_H Z^2 \left[ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$   
 for  $Z = 1, n_1 = 1, n_2 = \infty, \frac{1}{x} = R_H$   

$$\bar{\nu} = \frac{1}{\lambda_{\max}} = R_H Z^2 \left[ \frac{1}{2^2} - \frac{1}{3^2} \right] = \frac{1 \times 4}{x} \left[ \frac{5}{36} \right]$$
  

$$\lambda_{\max} = \frac{9x}{5}$$
73. (4) EWG increases acidic strength
74. (3) DIBAL - H reduces -CN group into aldehyde group.
75. (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.

76. (1)  $1s^2, 2s^2, 2p^6, 3s^2$  - in third transition, electron is to be removed from stable configuration.
77. (2) Evaporation of water is an endothermic process.
78. (4)  $XeF_{6(g)} + H_2O_{(g)} \rightleftharpoons XeOF_{4(g)} + 2HF_{(g)} \dots(i)$   
 $XeO_{4(g)} + XeF_{6(g)} \rightleftharpoons XeOF_{4(g)} + XeO_3F_{2(g)} \dots(ii)$   
 by reversing the equation (i) and adding (ii)  
 $XeO_{4(g)} + 2HF_{(g)} \rightleftharpoons XeO_3F_{2(g)} + H_2O_{(g)}$

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

79. (4) Resonance energy
80. (4) Steam distillation
81. (1) In corresponding compound  $NH_3$ , bond angle =  $107^\circ$  whereas in  $PH_3$ , bond angle  $\approx 90^\circ$ .  
 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.
82. (3) Bond strength depends on the extent of overlapping. Maximum overlapping is observed in the case of p-orbitals.
83. (2) At equilibrium, rate of forward reaction is equal to rate of backward reaction.
84. (1) Oxidation is a process in which hydrogen is removed or oxygen is added or loss of electron takes place or oxidation number increases.
85. (4)  $SN^1$  mechanism

### Section - B (Chemistry)

86. (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  $CO_2 = 8000 \times \frac{60}{100} = 4800 \text{ g}$  and

40% of C to CO thus wt. of C converted into

$$\text{CO} = 8000 \times \frac{40}{100} = 3200 \text{ g.}$$

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

∴ 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

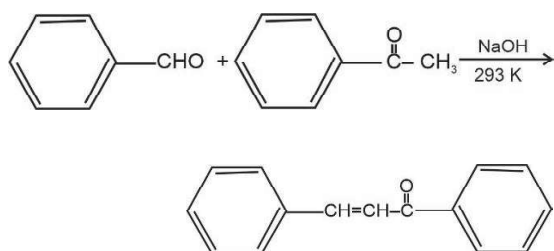
∴ 3200 g of C on combustion liberates

$$\begin{aligned} &= \frac{111 \times 3200}{12} \text{ kJ} \\ &= 29600 \text{ kJ} \end{aligned}$$

Total heat liberates would be

$$= 157600 + 29600 = 187200 \text{ kJ}$$

87. (1)



88. (3)  $\text{SN}^1 \propto$  stability of carbocation

89. (1) The correct match is

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

90. (3) A is false but R is true

91. (3)  $\rho = 1.25 \text{ g mL}^{-1}$ ,  $M_{\text{NaNO}_3} = 85 \text{ g mol}^{-1}$ ,

$$\text{Molarity} = 1 \text{ M} \quad \frac{1}{m} = \frac{\rho}{M} - \frac{M_{\text{NaNO}_3}}{1000}$$

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

$$m = 0.858.$$

92. (1) Suppose weight of  $\text{N}_2\text{O}_4 = x \text{ g}$

Suppose weight of  $\text{NO}_2 = 100 - x \text{ g}$

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

But molecular mass of the mixture =  $2 \times 38.3 = 76.6$

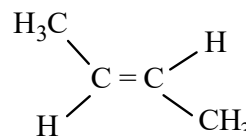
$$\Rightarrow \text{Total no. of moles in the mixture} = \frac{100}{76.6} = 1.3$$

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

$$\Rightarrow \text{No. of moles } (\text{NO}_2) = \frac{20}{46} = 0.434$$

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

94. (4) 'A' is  $\text{CH}_3 - \text{C} \equiv \text{C} - \text{C}_2\text{H}_5$  B is



95. (4) Green  $\text{Cr}_2(\text{SO}_4)_3$  is formed

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

Their correct form is:

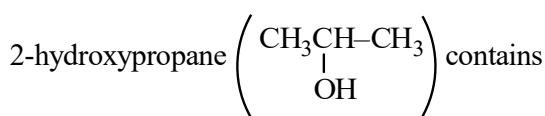
- The complex  $[\text{Ni}(\text{Cl}_4)]^{2-}$  is an outer orbital complex.

- The complex  $[\text{Mn}(\text{CN})_6]^{4-}$  is an inner orbital complex.

97. (3) Mercurous chloride,  $\text{Hg}_2\text{Cl}_2$  is used in calomel electrode.

$$98. (1) C = \frac{n}{V} = \frac{P}{RT} \quad \therefore \frac{dC}{dt} = \frac{1}{V} \left( \frac{dn}{dt} \right) = \frac{1}{RT} \left( \frac{dP}{dt} \right)$$

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



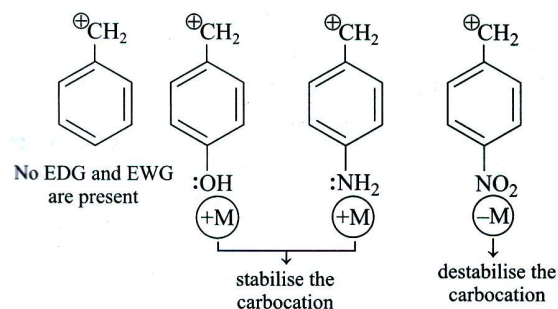
the  $\text{CH}_3\text{CH}(\text{OH})$  and  $\text{CH}_3\text{CO}-$  is present in

acetophenone  $\left( \text{C}_6\text{H}_5-\overset{\text{O}}{\parallel}{\text{C}}\text{CH}_3 \right)$  so, both of

these compounds will give, iodoform test, i.e. form iodoform on reaction with  $\text{I}_2$  and alkali.

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

$\text{R} > \text{P} > \text{Q} > \text{S}$



### Section - A (Biology : Botany)

101. (4) (NCERT 11<sup>th</sup> para 8.4/ Page no.127 )  
 102. (3) [NCERT 11<sup>th</sup>, Page 247, Point 15.4.2]  
 103. (3) (NCERT 11<sup>th</sup> Pg.233, Figure 14.4)  
 104. (2) (NCERT 12<sup>th</sup>, Pg 80, based on Law of Independent Assortment)  
 105. (3) (NCERT 12<sup>th</sup>, Pg 111, para 2, line 4 based)  
 106. (1) (NCERT 12<sup>th</sup>, Pg 91, Thalassaemia)  
 107. (4) (NCERT 12<sup>th</sup>, Pg. 114, TRANSLATION-2<sup>nd</sup> line)  
 108. (1) (NCERT 12<sup>th</sup> Page no 22, 1<sup>st</sup> paragraph, Conceptual)  
 109. (2) (NCERT 11<sup>th</sup>—page no. 211 – 13.5 Line 12 to 14 - concept based)  
 110. (2) (NCERT 12<sup>th</sup>, Pg 73, Figure 5.4 based on monohybrid cross)  
 111. (1) (NCERT 11<sup>th</sup>, Page no- 20, Paragraph-2.2.1, Line no- 1-10)  
 112. (2) (NCERT 11<sup>th</sup> Page no- 8, 2<sup>nd</sup> paragraph, Line 3 and 4)  
 113. (1) (NCERT 11<sup>th</sup> para 10.2.5 / Page no. 166 )  
 114. (3) (NCERT 12<sup>th</sup>, Pg 80, Para 1)  
 115. (3) (NCERT 12<sup>th</sup>, Mixed concept of cell div, Genetics, and Oogenesis)  
 116. (4) (NCERT 12<sup>th</sup>, Pg 112, Point (ii))  
 117. (3) [NCERT 11<sup>th</sup>Newly added family]

118. (4) (NCERT 11<sup>th</sup> page no. 213, point (a), page no. 214 – point (b) and (c) 13.6 -concept based)  
 119. (3) (NCERT 11<sup>th</sup> para 8.510 / Page no.139 )  
 120. (2) (NCERT 11<sup>th</sup> para 8.5.4 / Page no.134 )  
 121. (4) (NCERT 11<sup>th</sup> page no.35 to 36, conceptual)  
 122. (3) [NCERT 11<sup>th</sup>Newly added family]  
 123. (4) (NCERT 11<sup>th</sup> Pg.232, 1<sup>st</sup> Para, 14<sup>th</sup> line)  
 124. (1) (NCERT 11<sup>th</sup> para 8.510 / Page no.139)  
 125. (4) [NCERT 11<sup>th</sup> Page No. 68; Sub-topic 5.2.1]  
 126. (4) [NCERT 11<sup>th</sup> Page no. 88, First paragraph]  
 127. (1) (NCERT 12<sup>th</sup>, Pg 111, based on Permutation combination (Last 4<sup>th</sup> line))  
 128. (3) (NCERT 12<sup>th</sup> page no 29, Last paragraph, Line no 38-40)  
 129. (2) (NCERT 11<sup>th</sup> page no 20, line no- 12-14)  
 130. (4) (NCERT 11<sup>th</sup>, Page no-24, Paragraph-2.3.3, Line no-12,13)  
 131. (3) (NCERT 12<sup>th</sup>, 110, Figure 6.11)  
 132. (3) (NCERT 12<sup>th</sup>, Pg 97, based on Chargaff's rule)  
 133. (4) [NCERT 11<sup>th</sup> Page 249, point 15.4.3.3]  
 134. (1) (NCERT 11<sup>th</sup> Page no.32 to 33, conceptual.)  
 135. (3) (NCERT 12<sup>th</sup> Page no.245 3<sup>rd</sup> para 1<sup>st</sup> line,concept.)
- ### Section - B (Biology : Botany)
136. (4) [NCERT 11<sup>th</sup>, Page no. 88, Point 6.2.1 (Line no.- 01-06)]  
 137. (4) [NCERT 11<sup>th</sup>, Page 248, Second paragraph]  
 138. (3) (NCERT 11<sup>th</sup> Pg.229, 14.1)  
 139. (4) (NCERT 11<sup>th</sup>, page no.29, conceptual)  
 140. (3) (NCERT 11<sup>th</sup> Page no.30 3.1,2<sup>nd</sup> and 3<sup>rd</sup> para)  
 141. (4) (NCERT 12<sup>th</sup> Page no.249 fig.14.4(d) concept based)  
 142. (4) (NCERT 11<sup>th</sup> para 10.1.1 conceptual based / Page no.164 )  
 143. (4) (NCERT 12<sup>th</sup> Page no- 23, 2<sup>nd</sup> Paragraph, Line no- 20 and 21)  
 144. (2) (NCERT 11<sup>th</sup> para 10.4.1/ Page no. 168 )  
 145. (3) [NCERT 11<sup>th</sup> Page No. 80; Sub-topic 5.9.2]  
 146. (1) (NCERT 11<sup>th</sup>, Page no- 19, 1<sup>st</sup> paragraph, Line no-1-7)

147. (3) (NCERT 12<sup>th</sup>, Pg 74, Based on test cross)
148. (4) (NCERT 12<sup>th</sup> no-29, 1<sup>st</sup> paragraph, Last line)
149. (2) (NCERT 11<sup>th</sup> page no. 222 – fig. 13.10 - concept based)
150. (4) (NCERT 11<sup>th</sup> Page no- 7, 2<sup>nd</sup> paragraph, Line no- 34 and 35 )
- Section - A (Biology : Zoology)**
151. (3) [NCERT 11<sup>th</sup> P.No.306, 1<sup>st</sup> para]
152. (2) [NCERT 11<sup>th</sup> P.No.320, Meninges Of Brain]
153. (4) (NCERT 12<sup>th</sup> Page No - 151 fig. 8.4)
154. (1) [NCERT 11<sup>th</sup> P.No.303, Last 2 Para]
155. (3) (NCERT 11<sup>th</sup> page 114, para 3)
156. (2) (NCERT 11<sup>th</sup> page no113, para 1)
157. (1) (NCERT 11<sup>th</sup> page no113, para 1)
158. (2) (NCERT 11<sup>th</sup> Page No - 190 Regulation of respiration)
159. (2) [NCERT 11<sup>th</sup> P.No.321, Forebrain , Midbrain And Hind brain Mixed ]
160. (1) (NCERT 12<sup>th</sup> Page No - 159 Cocaine)
161. (1) (NCERT 11<sup>th</sup> Page No. 53; phylum - mollusca)
162. (2) (NCERT 11<sup>th</sup> Page No. 52; 10th line of phylum annelida)
163. (3) [NCERT 12<sup>th</sup> P.No.211, Last para]
164. (4) [NCERT 12<sup>th</sup> P.No.195, Restriction Enzymes 1<sup>st</sup> para]
165. (2) [NCERT 12<sup>th</sup> P.No.204, Fig 11.7]
166. (3) (NCERT 11<sup>th</sup> Page No - 189 Transport of O<sub>2</sub>)
167. (2) (NCERT 12<sup>th</sup>, Evolution, Whole chapter knowledge based)
168. (2) (NCERT 12<sup>th</sup> para10.1 / Page no. 181 )
169. (4) (NCERT 12<sup>th</sup>, Page no.266 to 267)
170. (4) (NCERT 12<sup>th</sup> Page no.268 last 2<sup>nd</sup> para, summary)
171. (3) (NCERT 11<sup>th</sup>, Page no- 149, Paragraph- 9.6, Line no- 10-14)
172. (2) (NCERT 12<sup>th</sup> Page no- 127, 2<sup>nd</sup> paragraph, line no- 18,19)
173. (4) (NCERT 11<sup>th</sup> Page No - 194 formed elements)
174. (3) (NCERT 12<sup>th</sup> Page No - 159 Cannabinoids)
175. (2) (NCERT 12<sup>th</sup> Page No - 161 Addiction & dependence)
176. (3) (NCERT 11<sup>th</sup> page 114, para2)
177. (1) (NCERT 12<sup>th</sup> page 62, 4.3 MTP)
178. (4) (NCERT 11<sup>th</sup>, Page no-143, Table- 9.1)
179. (1) (NCERT 12<sup>th</sup> page no-127, 1<sup>st</sup> paragraph, line no-12)
180. (1) (NCERT 11<sup>th</sup>, Page No. 337, Glucorticoids)
181. (4) (NCERT 11<sup>th</sup>; Page No. 335, 2nd paragraph)
182. (2) [NCERT 11<sup>th</sup> p310; 1<sup>st</sup> Line]
183. (3) (NCERT 12<sup>th</sup> page 50, menstrual cycle)
184. (2) (NCERT 12<sup>th</sup> page 60, para 1)
185. (3) (NCERT 11<sup>th</sup>; Page No. 294; 6th line of 3rd paragraph)
- Section - B (Biology : Zoology)**
186. (1) (NCERT 11<sup>th</sup>, Page no- 148, Paragraph- 9.5, Line no- 11-14)
187. (2) [NCERT 12<sup>th</sup> P.No.193, Last para]
188. (2) (NCERT 11<sup>th</sup> Page No. 56; Class- chondrichthyes)
189. (4) (NCERT 11<sup>th</sup>, Page no- 159, Paragraph- 9.12.6, Line no- 9-11)
190. (3) (NCERT 12<sup>th</sup> page no. 231 (ii), 1<sup>st</sup> Para)
191. (4) [NCERT 11<sup>th</sup> P.No.319, 2<sup>nd</sup> para Applied ]
192. (4) [NCERT 11<sup>th</sup> P.No.309, 310,311]
193. (2) (NCERT 12<sup>th</sup> Page no- 135, Paragraph- 7.6, line no- 33 and 34)
194. (4) (NCERT 12<sup>th</sup> para10 introduction / Page no. 180)
195. (2) (NCERT 12<sup>th</sup>, Page no.230 to 231)
196. (2) (NCERT 11<sup>th</sup> Mixed question of excretory and chemical Page No.294 and 337)
197. (3) (NCERT 12<sup>th</sup>, Page No - 196 Coagulation of blood)
198. (3) (NCERT 12<sup>th</sup>, Page No. 132)
199. (4) (NCERT 12<sup>th</sup>, p.no. 56)
200. (3) (NCERT 12<sup>th</sup>, page 58,61 para 3)