

ANSWER KEY
NEET
Part Test-02 (XI Regular)

PHYSICS

Q.1 (3)	Q.2 (4)	Q.3 (4)	Q.4 (4)	Q.5 (3)	Q.6 (3)	Q.7 (1)	Q.8 (2)	Q.9 (1)	Q.10 (1)
Q.11 (3)	Q.12 (2)	Q.13 (4)	Q.14 (1)	Q.15 (1)	Q.16 (3)	Q.17 (3)	Q.18 (4)	Q.19 (2)	Q.20 (3)
Q.21 (3)	Q.22 (2)	Q.23 (3)	Q.24 (1)	Q.25 (1)	Q.26 (4)	Q.27 (3)	Q.28 (1)	Q.29 (4)	Q.30 (1)
Q.31 (1)	Q.32 (2)	Q.33 (2)	Q.34 (3)	Q.35 (3)	Q.36 (3)	Q.37 (3)	Q.38 (3)	Q.39 (4)	Q.40 (4)
Q.41 (1)	Q.42 (4)	Q.43 (1)	Q.44 (2)	Q.45 (2)	Q.46 (2)	Q.47 (2)	Q.48 (1)	Q.49 (3)	Q.50 (4)

CHEMISTRY

Q.51 (3)	Q.52 (3)	Q.53 (2)	Q.54 (3)	Q.55 (1)	Q.56 (1)	Q.57 (3)	Q.58 (1)	Q.59 (3)	Q.60 (1)
Q.61 (3)	Q.62 (1)	Q.63 (2)	Q.64 (2)	Q.65 (3)	Q.66 (4)	Q.67 (2)	Q.68 (1)	Q.69 (2)	Q.70 (2)
Q.71 (3)	Q.72 (2)	Q.73 (2)	Q.74 (1)	Q.75 (1)	Q.76 (2)	Q.77 (2)	Q.78 (4)	Q.79 (1)	Q.80 (4)
Q.81 (3)	Q.82 (3)	Q.83 (4)	Q.84 (1)	Q.85 (2)	Q.86 (2)	Q.87 (4)	Q.88 (2)	Q.89 (3)	Q.90 (4)
Q.91 (4)	Q.92 (2)	Q.93-(2)	Q.94 (4)	Q.95 (4)	Q.96 (2)	Q.97 (1)	Q.98 (1)	Q.99 (4)	Q.100-(2)

BIOLOGY-I

Q.101 (3)	Q.102 (1)	Q.103 (1)	Q.104 (1)	Q.105 (3)	Q.106 (2)	Q.107 (2)	Q.108 (1)	Q.109 (4)	Q.110 (4)
Q.111 (2)	Q.112 (4)	Q.113 (4)	Q.114 (3)	Q.115 (2)	Q.116 (1)	Q.117 (3)	Q.118 (3)	Q.119 (2)	Q.120 (2)
Q.121 (1)	Q.122 (1)	Q.123 (4)	Q.124 (4)	Q.125 (2)	Q.126 (2)	Q.127 (2)	Q.128 (4)	Q.129 (3)	Q.130 (2)
Q.131 (3)	Q.132 (3)	Q.133 (3)	Q.134 (1)	Q.135 (1)	Q.136 (3)	Q.137 (3)	Q.138 (1)	Q.139 (2)	Q.140 (3)
Q.141 (4)	Q.142 (3)	Q.143 (1)	Q.144 (1)	Q.145 (4)	Q.146 (3)	Q.147 (2)	Q.148 (4)	Q.149 (2)	Q.150 (2)

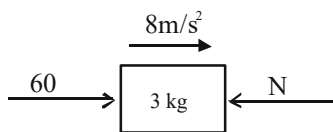
BIOLOGY-II

Q.151 (1)	Q.152 (1)	Q.153 (4)	Q.154 (2)	Q.155 (1)	Q.156 (4)	Q.157 (4)	Q.158 (4)	Q.159 (3)	Q.160 (1)
Q.161 (2)	Q.162 (1)	Q.163 (1)	Q.164 (4)	Q.165 (3)	Q.166 (4)	Q.167 (4)	Q.168 (1)	Q.169 (3)	Q.170 (2)
Q.171 (4)	Q.172 (2)	Q.173 (4)	Q.174 (4)	Q.175 (3)	Q.176 (1)	Q.177 (2)	Q.178 (2)	Q.179 (1)	Q.180 (3)
Q.181 (3)	Q.182 (1)	Q.183 (1)	Q.184 (4)	Q.185 (1)	Q.186 (3)	Q.187 (4)	Q.188 (3)	Q.189 (2)	Q.190 (1)
Q.191 (1)	Q.192 (4)	Q.193 (2)	Q.194 (3)	Q.195 (4)	Q.196 (4)	Q.197 (3)	Q.198 (1)	Q.199 (2)	Q.200 (3)

SOLUTIONS

PHYSICS
SECTION-A

Q.1 (3)
 $60 - 20 = (3 + 2)a$
 $a = \frac{40}{5} = 8 \text{ m/s}^2$

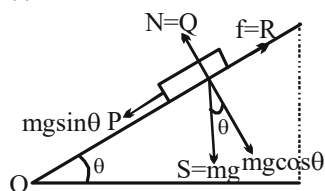


$60 - N = 8 \times 3$
 $N = 60 - 24 = 36 \text{ N}$

Q.2 (4)
 $\Delta P = \text{Area under F-t curve}$
 $= \frac{1}{2}(9 + 4) \times 8 - \frac{1}{2} \times 6 \times 3$
 $= 13 \times 4 - 9 = 52 - 9 = 43 \text{ N-s}$



Q.3 (4)



Q.4 (4)
 Action and reaction generates simultaneously and act on different bodies.



Q.5 (3)
 $T_1 = (12 + 8)(9.8 + 2.2)$
 $= 240 \text{ N}$



Q.25 (1)
Distance travelled in 3rd second

$$S_3 = u + \frac{a}{2} (2n-1)$$

$$a = \frac{10}{20} = \frac{1}{2} \text{ms}^{-2}$$

$$S_3 = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right)(6-1) = \frac{5}{4} \text{m}$$

$$\text{work done} = 10 \times \frac{5}{4} = \frac{50}{4} \text{J} = 12.5 \text{J}$$

Q.26 (4)

$$\int \Delta w = \int_4^6 F \Delta x$$

$$W = \int_4^6 10x dx = \left[\frac{10x^2}{2} \right]_4^6$$

$$= 5 [6^2 - 4^2]$$

$$= 5 [36 - 16]$$

$$= 5 \times 20 = 100 \text{J}$$

Q.27 (3)

$$W(f_k) + W(N) + W(mg) + W(f_{ext}) = \Delta K$$

$$\Rightarrow W(f_k) - 3 \times 10 \times 20 + 800 = 0$$

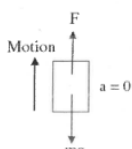
$$\Rightarrow W(f_k) = -200 \text{J}$$

Q.28 (1)

$$mg - N = \frac{mv^2}{R} \quad (N=0)$$

$$\Rightarrow V = \sqrt{gR} = \sqrt{100} = 10 \text{m/s}$$

Q.29 (4)



$$\therefore F = mg$$

$$\text{and } W_F > 0 \quad W_g < 0$$

$$\text{and } \Delta K = 0$$

$$\therefore W_{\text{all}} = 0$$

Q.30 (1)

$$W = \vec{F} \cdot \vec{S}$$

$$= (2\hat{i} + \hat{j} - \hat{k}) \cdot [(3\hat{i} + 2\hat{j} - 2\hat{k}) - (2\hat{i} - \hat{j} + \hat{k})]$$

$$= (2\hat{i} + \hat{j} - \hat{k}) \cdot (\hat{i} + 3\hat{j} - 3\hat{k})$$

$$= 2 + 3 + 3 = 8$$

Q.31 (1)

From A to B :
Velocity increases so kinetic energy increases. Therefore, work is positive from A to B.

$$W_{BC} = 0$$

$$W_{CD} = -ve$$

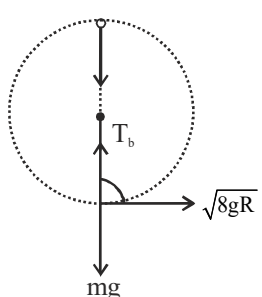
$$W_{DE} = 0$$

Q.32 (2)

$$\text{Power} = v^3 \frac{dm}{dt}$$

$$= 50 \times 4^3 = 50 \times 64 = 3200$$

Q.33 (2)



$$T_b - mg = \frac{m(\sqrt{8gR})^2}{R}$$

$$T_b = 9mg \quad \dots\dots(i)$$

velocity at topmost point

$$\frac{1}{2} m (\sqrt{8gR})^2 = mg(2R) + \frac{1}{2} m V_T^2$$

$$4mgR - 2mgR = \frac{1}{2} m V_T^2$$

$$V_T = 2\sqrt{gR}$$

$$T_t + mg = \frac{m(2\sqrt{gR})^2}{R} \Rightarrow T_t = 3mg \dots\dots(2)$$

$$\frac{T_t}{T_b} = \frac{3mg}{9mg} = \frac{1}{3}$$

Q.34 (3)

$$F_c = -\frac{\partial u}{\partial x}$$

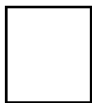
$$\int F_c dx = -\Delta U$$

work done by conservative force change in potential energy

work done by non-conservative force is not independent of path so the work done by a closed path is not zero.

Q.35 (3)

$$\frac{K.E_1}{K.E_2} = \frac{4}{1}$$



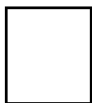
$$\frac{\frac{1}{2}m_1v^2}{\frac{1}{2}m_2v^2} = \frac{4}{1}$$

$$\frac{m_1}{m_2} = \frac{4}{1}$$

SECTION-B

Q.36 (3)

$$W_{spring} = \frac{1}{2}m(v_f^2 - v_i^2)$$



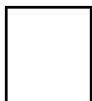
$$\frac{1}{2}K\left(\frac{20}{100}\right)^2 = \frac{1}{2} \times 1 \times (24^2 - 12^2)$$

$$K \times \frac{4}{100} = 12 \times 36$$

$$K = 10800 \text{ N/m}$$

Q.37 (3)

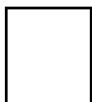
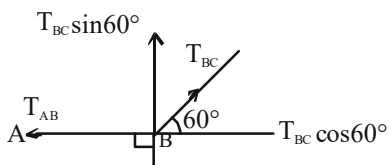
$$a = V \frac{dV}{dX} = (8\sqrt{x}) \frac{d(8\sqrt{x})}{dx}$$



$$= 64 \sqrt{x} \cdot \frac{1}{2\sqrt{x}} = 32 \text{ m/s}^2$$

$$F = ma = \frac{200}{1000} \times 32 = 6.4 \text{ N}$$

Q.38 (3)



$$T_{BC} \sin 60^\circ = 10g$$

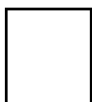
$$T_B = \frac{100}{\sin 60^\circ} = \frac{200}{\sqrt{3}} \text{ N}$$

$$T_{AB} = T_{BC} \cos 60^\circ = \frac{200}{\sqrt{3}} \times \frac{1}{2} = \frac{100}{\sqrt{3}} \text{ N}$$

Q.39 (4)

$$V = \text{constant}$$

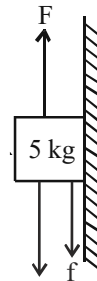
$$\vec{V} = \text{constant}$$



$$a = \frac{d\vec{v}}{dt} = 0$$

So, force is not required to keep it moving with uniform velocity.

Q.40 (4)



$$5g = 50 \text{ N}$$

$$f_N (\text{Normal force}) = 80 \text{ N}$$

$$f_f = \mu_s N = 0.4 \times 80 = 32 \text{ N}$$

$$F = 50 + f = 50 + 32 = 82 \text{ N}$$

Q.41 (1)

On rainy day, due to wetting of the surface coefficient of friction is lowered so it becomes difficult to drive a car.



Q.42 (4)

$$\frac{x}{\ell} = \frac{\mu}{\mu + 1}$$



$\frac{x}{\ell}$ = fraction of length of the chain hanging below table

$$\frac{2}{5} = \frac{\mu}{\mu + 1}$$

$$2\mu + 2 = 5\mu$$

$$3\mu = 2$$

$$\mu = \frac{2}{3}$$

Q.43 (1)

When elevator is moving with constant speed, Force on floor by person = 600 N



When elevator accelerates upwards at 3 m s^{-2} then force on floor by person = $600 \text{ N} + 180 \text{ N} = 780 \text{ N}$

When elevator accelerates downward at 3 m s^{-2} then force on floor by person = $600 - 180 = 420 \text{ N}$

Q.44 (2)

$$N = \frac{mV^2}{R}$$



$$\mu N = mg$$

$$\mu \frac{mV^2}{R} = mg$$

$$\mu = \frac{Rg}{V^2} = \frac{8 \times 10}{25 \times 5} = 0.64$$

Q.45 (2)

$$F = -\frac{dU}{dx}$$

0 to a $F = -ve$ constant
 $x > a$ $F = zero$

Q.46 (2)

Work done
 = Final P.E. - Initial P.E.

$$= mg\frac{a}{2} - mg\frac{c}{2}$$

$$= mg\left[\frac{a}{2} - \frac{c}{2}\right]$$

Q.47 (2)

$$Area = \int adx = \frac{1}{2}(v^2 - u^2)$$

$$\Rightarrow \frac{1}{2}(5+10)^2 = \frac{1}{2}(v^2 - 2^2) \Rightarrow v = \sqrt{34} \text{ m/s}$$

Q.48 (1)

$$\frac{1}{2}k_1x^2 + \frac{1}{2}k_2x^2 = \frac{1}{2}mv^2$$

Q.49 (3)

$$P \propto n^3$$

$$\frac{P_p}{P_i} = 8 \Rightarrow P_f = 8 P_i$$

Q.50 (4)

$$K.E_A + P.E_A = K.E_B + P.E_B$$

$$mg(2) + \frac{1}{2}m(5)^2 = \frac{1}{2}mV_B^2 + 0$$

$$V_B^2 = 2\left[2g + \frac{25}{2}\right]$$

$$V_B^2 = 40 + 25$$

$$V_B = \sqrt{65} \text{ m/s}$$

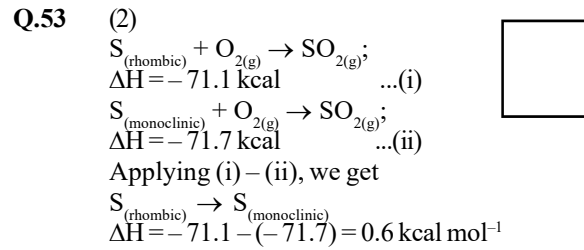
**CHEMISTRY
SECTION - A**

Q.51 (3)

On increasing pressure the reaction goes towards less no. of gaseous moles to overcome increase in pressure.
 \Rightarrow Effect of pressure on solid and liquid can be ignored for heterogeneous equilibrium

Q.52 (3)

At boiling point, process is in equilibrium
 So, ΔG is zero.



Q.54 (3)

Heat of combustion at constant vol. = ΔU
 $\Delta U = -5133 \text{ J mol}^{-1}$

$$C_{10}H_8(s) + 12O_2(g) \rightarrow 10CO_2(g) + 4H_2O(l)$$

$$\Delta n_g = 10 - 12 = -2$$

$$\Delta H_g = \Delta U + \Delta n_g RT$$

$$= -5133 + (-2) \times 8.314 \times 300 = -5133 - 4988.4$$

$$\Delta H = -10121 \text{ J}$$

Q.55 (1)

$$\frac{K_p}{K_c} = (RT)^{\Delta n_g}$$

$$\frac{K_p}{K_c} \text{ is minimum; when } \Delta n_g \text{ is minimum}$$

(i) $\Delta n_g = -2$ (ii) $\Delta n_g = 1$
 (iii) $\Delta n_g = 0$ (iv) $\Delta n_g = 1$

Q.56 (1)

For isothermal reversible process,

$$W = -2.303 nRT \log \frac{V_2}{V_1}$$

$T = 27^\circ\text{C} = 300 \text{ K}$
 $V_1 = 4\text{L}, V_2 = 40\text{L}$

$$W = -2.303 \times 2 \times 10^{-3} \times 300 \times 2 \log \frac{40}{4}$$

$$W = -1.38 \times 2 = -2.76 \text{ kcal}$$

So, work done by gas is 2.76 kcal

Q.57 (3)

Q.58 (1)

Given $\Delta H_{fus} = 1.435 \text{ Kcal mol}^{-1}$
 $\Delta S_{fus} = ?$
 $T = 0^\circ\text{C} = 273 \text{ K}$

$$\Delta S_{fus} = \frac{\Delta H_{fus}}{T} = \frac{1.435 \times 10^3}{273}$$

$$\Delta S_{fus} = 5.260 \text{ Cal mol}^{-1} \text{ K}^{-1}$$

Q.59 (3)
 (1) If ΔH is (-ve) and ΔS is +ve, ΔG is -ve and reaction is spontaneous at all temperature.
 (2) If ΔH is -ve and ΔS is (-ve) then $T\Delta S$ is also -ve, So $\Delta G = \Delta H - T\Delta S$ will be negative if temperature is low and reaction is spontaneous.
 (3) ΔH is (+ve) and ΔS is (+ve) then ΔG is -ve if temperature is high and reaction is spontaneous.
 (4) If ΔH is +ve and ΔS is -ve and reaction is non-spontaneous at all temperature.

Q.60 (1)
 At absolute zero i.e. zero kelvin temperature all the molecular motion ceases and order of crystalline solid become perfect and entropy approach to zero.

Q.61 (3)
 Heat of combustion is defined for 1 mole of substance, So from 16 g of CH_4 (1 mol, x kJ) heat is released, therefore from 0.32g of CH_4 ,

$$\text{Heat released} = \frac{x}{16} \times 0.32 \times 1000 = 20x$$

Q.62 (1)
 For spontaneous reaction
 $\Delta G < 0$
 $\Delta H - T\Delta S < 0$
 $\Delta H < T\Delta S$

$$T > \frac{\Delta H}{\Delta S}$$

$$T > \frac{30 \times 1000}{60}$$

$$T > 500 \text{ K}$$

Q.63 (2)
 Work done in reversible isothermal expansion is given by

$$W = -2.303 nRT \log \frac{V_2}{V_1}$$

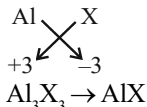
$$\text{or } -2.303 nRT \log \frac{P_1}{P_2}$$

Q.64 (2)
 For insulated container $q = 0$
 $W = -P_{\text{ext}}(V_2 - V_1)$
 $W = -4 \times (7.5 - 1.5)$
 $= -24 \text{ atm-L}$
 $= -24 \times 101.3 = 2431.2 \text{ J}$
 $= -2.43 \text{ kJ}$
 From first law of thermodynamics
 $\Delta U = q + W$
 $\Delta U = W = -2.43 \text{ kJ} (\because q = 0)$

Q.65 (3)
 For isothermal process temperature is constant
 So, $\Delta T = 0$

$$\text{Heat capacity} = \frac{\text{heat}}{\Delta T}$$

$$\text{Heat capacity} = \frac{\text{heat}}{0} = \text{Infinite}$$

Q.66 (4)
 'X' element is nitrogen (N)


Q.67 (2)
 σ -bond is formed by axial overlapping in same phase.

Q.68 (1)


Q.69 (2)
 H_2O is polar and planar, because both the bond pairs lie in same plane.

Q.70 (2)
 $\text{H}_2 \rightarrow \sigma 1s^2$

$$\text{Bond order} = \frac{N_b - N_a}{2}$$

$$= \frac{1 - 0}{2} = 0.5$$

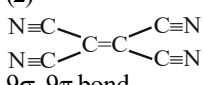
$$\text{He}_2 = 0$$

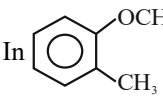
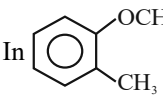
$$\text{Li}_2 = 1$$

$$\text{Be}_2 = 0$$

Q.71 (3)
 Formal charge
 $= VE - (N_b e^-) - \frac{BE}{2}$
 $= 5 - 1 - \frac{6}{2} = 5 - 1 - 3 = +1$

Q.72 (2)
 $2p_{\text{axial}} - 2p_{\text{axial}} > 2s - 2p_{\text{axial}} > 2s - 2s > 3s - 3s$

Q.73 (2)

 $9\sigma, 9\pi$ bond

- Q.74** (1)
 $d_{x^2-y^2}$ and d_{z^2} orbitals have electron density along the axes.
- Q.75** (1)
 Energy of resonance hybrid is always less than the energy of any single canonical structure. Resonance hybrid is real but canonical forms are hypothetical.
- Q.76** (2)
 $ICl_2^- \rightarrow 2\sigma B.P. + 3L.P \rightarrow sp^3 d$
 $PCl_6^- \rightarrow 6\sigma B.P. \rightarrow sp^3 d^2$ Hyb.
 $HCN \rightarrow 2\sigma B.P. \rightarrow sp$ Hyb.
 $NH_3 \rightarrow 3\sigma B.P. + 1 L.P. \rightarrow sp^3$ Hyb.
- Q.77** (2)
 $ICl_4^- \rightarrow sp^3 d^2 \rightarrow$ square planar
 $ClF_5 \rightarrow sp^3 d^2 \rightarrow$ square pyramidal
 $XeO_3 \rightarrow sp^3 \rightarrow$ pyramidal
 $IF_7 \rightarrow sp^3 d^3 \rightarrow$ pentagonal bipyramidal
- Q.78** (4)
 Facts
- Q.79** (1)
 bond order \propto stability
 $O_2^- \rightarrow 1.5$
 $O_2 \rightarrow 2$
 $O_2^+ \rightarrow 2.5$
 $O_2^- < O_2 < O_2^+$
- Q.80** (4)
 In PCl_5 , P has 10 e^- in their outermost shell, so it has expanded octet.
- Q.81** (3)
 CH_4 has sp^3 hybridisation, so bond angle is $109^\circ 28'$.
- Q.82** (3)

 In  intramolecular
 H-bonding is absent because there is no hydrogen attached with more electronegative oxygen atom.
- Q.83** (4)
 SF_6 is octahedral in shape hence all S-F bond lengths in SF_6 are equal.

- Q.84** (1)
 $C-H \rightarrow 107$ pm
 $O-H \rightarrow 96$ pm
 $N-O \rightarrow 136$ pm
 $C-O \rightarrow 143$ pm

- Q.85** (2)
 Facts

SECTION - B


- Q.86** (2)
 $CO_2(g) + H_2(g) \rightarrow CO(g) + H_2O(g) \Delta H = ?$
 $\Delta H_r^\circ = \sum (\Delta H_f^\circ)_p - \sum (\Delta H_f^\circ)_R$
 $\Delta H_r^\circ = \left[(\Delta H_f^\circ)_{CO(g)} + (\Delta H_f^\circ)_{H_2O(g)} \right] -$
 $\left[(\Delta H_f^\circ)_{CO_2(g)} + (\Delta H_f^\circ)_{H_2(g)} \right]$
 $\Delta H_r^\circ = [-110.5 + (-241.8)] - [-395.5 + 0]$
 $\Delta H_r^\circ = 41.19 \text{ kJ mol}^{-1}$

- Q.87** (4)
 Heat of neutralisation of oxalic acid = $-106.7 \text{ kJ mol}^{-1}$
 $H_2C_2O_4 + 2OH^- \rightarrow C_2O_4^{2-} + H_2O$;
 $\Delta nH = -106.7 \text{ KJ mol}^{-1}$
 If heat of neutralisation for strong acid and strong base is $-57.1 \text{ kJ/equivalent}$ then for neutralisation of 2 mole of NaOH by strong acid should be $2 \times (-57.1) = -114.2 \text{ kJ}$
 For ionisation of 1 mol of $H_2C_2O_4$ heat
 $= 114.2 - 106.7 = 7.5 \text{ kJ mol}^{-1}$

- Q.88** (2)
 For adiabatic process, heat transfer is zero so, $q = 0$
 For adiabatic process, according to first law of thermodynamics.
 $\Delta U = q + w$
 $\Delta U = w [q = 0]$
 So, work done is equal to change in internal energy, but it is not the reason for Assertion.

- Q.89** (3)
 Given specific heat (C)
 $= 0.4 \text{ J } (^\circ\text{C})^{-1} \text{ g}^{-1}$
 Amount of heat required = $mC\Delta T$
 $= 21 \times 0.4 \times (350 - 250) = 840 \text{ J}$

- Q.90** (4)
 For spontaneity
 $\Delta S_{\text{total}} > 0$
 On the basis of Second Law of thermodynamics, entropy of universe i.e. total entropy increases for every spontaneous process.

- Q.91** (4)
To show H-bonding hydrogen should attached with F, O, N elements.
- Q.92** (2)
 σ^*2p_z is lowest unoccupied molecular orbital for F_2 .
- Q.93** (2)
Order of electropositive character
 $Ba > Ca > Be$
So order of covalent character
 $BaH_2 < CaH_2 < BeH_2$
- Q.94** (4)
Value based
- Q.95** (4)
Facts
- Q.96** (2)
 $SO_2 \rightarrow ES_1^{+4}$
 $SO_3 \rightarrow ES_2^{+6} \text{ (max)}$
 $SF_4 \rightarrow ES_1^{+4}$
 $H_2SO_3 \rightarrow ES_1^{+4}$
- Q.97** (1)

 $l.p = 2$ $l.p = 3$ $l.p = 1$
(NEW NCERT 11th Part-I Page No. 112)
- Q.98** (1)
 $B_2 \rightarrow \sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 (\pi 2p_x^1 = \pi 2p_y^1)$
 $C_2 \rightarrow \sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 (\pi 2p_x^2 = \pi 2p_y^2)$
 B_2 and C_2 contains only π Bond
- Q.99** (4)
Correct order of dipole moment is
 $NH_3 > NF_3 > BF_3$
- Q.100** (2)
 $ClF_5 \rightarrow 5$ Bond pair + 1 Lone pair

**BIOLOGY-I
SECTION-A**

- Q.101** (3)
New NCERT Pg. No. 64
 - **Statement I:** Imbricate aestivation involves overlapping of petals or sepals in a whorl but not in any particular order. When sepals or petals in a whorl just touch one another without overlapping, it is called valvate aestivation, not imbricate.
 - **Statement II:** Correctly describes the vexillary aestivation seen in flowers like those of pea and bean.
- Q.102** (1)
New NCERT Pg. No. 65
 - Marginal (a): Seen in Pea (iii) where ovules are attached along the margin.
 - Axile (b): Seen in China rose (i) where ovules are attached along the central axis.
 - Parietal (c): Seen in *Argemone* (iv) where ovules are attached to the ovary wall.
 - Free central (d): Seen in Primrose (ii) where ovules are attached to the central axis without septa.
- Q.103** (1)
Old NCERT Pg. No. 67
 - Stilt roots (1): Incorrect, as stilt roots provide additional support, not help in breathing.
 - Tap roots (2): Correct, as they store food in plants like carrot and turnip.
 - Prop roots (3): Correct, as they support large trees like the banyan.
 - Pneumatophores in *Rhizophora* (4): Correct, as they help in respiration.
- Q.104** (1)
New NCERT Pg. No. 65, 66
 - In both, fruit is a drupe: Correct, both mango and coconut are drupes.
 - Endocarp is edible in both: Incorrect, the endocarp is hard in both fruits; the edible part in mango is the mesocarp.
 - Mesocarp in coconut is fibrous and in mango it is fleshy: Correct.
 - In both, fruit develops from monocarpellary ovary: Correct.
- Q.105** (3)
New NCERT Pg. No. 63, 64, 65
 - China rose: Exhibits twisted aestivation, monoadelphous stamens, and axile placentation.
 - Perigynous flower (3): Incorrect, as China rose has a hypogynous flower where the ovary is superior.

Q.106 (2)**New NCERT Pg. No. 63**

In flowers like lily, the calyx and corolla are not distinct and are collectively termed perianth, often appearing similar (tepals).

Q.107 (2)**Old NCERT Pg. No. 69**

The lateral branch with short internodes, each bearing a rosette of leaves and a tuft of roots, is a characteristic of aquatic plants like Water hyacinth and *Pistia*.

Q.108 (1)**New NCERT Pg. No. 67**

- Seeds of pea are endospermic: Incorrect, pea seeds are non-endospermic.
- Plumule and radicle are enclosed in sheaths: Correct.
- Consists of one large cotyledon known as scutellum: Correct.
- Embryo consists of two cotyledons: Incorrect, characteristic of dicots.

Q.109 (4)**New NCERT Pg. No. 62**

- *Datura*: Exhibits radial symmetry (actinomorphic), meaning it can be divided into two equal halves along any plane passing through the center.
- *Cassia* (1), *Canna* (2), *Gulmohur* (3): Exhibit bilateral symmetry (zygomorphic).

Q.110 (4)**New NCERT Pg. No. 67**

The correct floral formula for Brassicaceae includes a bisexual, actinomorphic flower with four sepals, four petals, tetradynamous stamens, and a bicarpellary, syncarpous gynoecium with superior ovary.

Q.111 (2)**New NCERT Pg. No. 64**

- Epipetalous stamens: Stamens attached to the petals, as seen in Brinjal (1).
- Diadelphous (3): Found in Pea.
- Polyadelphous (4): Found in Citrus.
- Epitetalous (2): Incorrect, as this condition (stamens attached to tepals) is not seen in mustard.

Q.112 (4)**New NCERT Pg. No. 61**

Guava exhibit opposite phyllotaxy and China rose alternate.

Q.113 (4)**New NCERT Page 73**

The ovary is said to be inferior as in flowers of guava and cucumber, and the ray florets of sunflower.

Q.114 (3)**New NCERT Pg. No. 73**

- Monocot stem (a): Conjoint closed vascular bundles, matched with iii-K.
- Dicot stem (b): Conjoint open vascular bundles, matched with ii-L.
- Root (c): Radial vascular bundles, matched with i-M.

Q.115 (2)**Old NCERT Pg. No. 85**

Shoot apical meristem: Located at the tips of stems, responsible for the primary growth of the plant.

Q.116 (1)**Old NCERT Pg. No. 87**

- Endarch xylem: Found in the stem where protoxylem is towards the pith.
- Exarch xylem: Found in the root where protoxylem is towards the periphery.

Q.117 (3)**Old NCERT Pg. No. 86**

Collenchyma: An elastic, living mechanical tissue found in growing parts of plants, such as young stems and leaf petioles, providing flexibility and support.

Q.118 (3)**New NCERT Pg. No. 73**

Radial vascular bundle: Xylem and phloem are arranged in separate bundles on different radii, commonly seen in roots.

Q.119 (2)**New NCERT Pg. No. 74**

Conjunctive tissue: Parenchymatous cells lying between xylem and phloem patches in dicot roots.

Q.120 (2)
Old NCERT Pg. No. 87
 • Tracheids: Are single, elongated cells with tapering ends, not composed of fused cells.
 • Tube-like (1), lignified wall (3), and tapering ends (4): All correct descriptions of tracheids.

Q.121 (1)
New NCERT Pg. No. 76
 • Statement I: Correct, as the cambium is present between phloem and xylem in dicotyledonous stems.
 • Statement II: Correct, as conjoint vascular bundles have xylem and phloem on the same radius.

Q.122 (1)
New NCERT Pg. No. 76
 Starch sheath: Refers to the endodermis in dicot stems, characterized by the storage of starch.

Q.123 (4)
New NCERT Pg. No. 80, 81
 • Statement I: Incorrect, as adult frogs have a short alimentary canal because they are carnivorous, not herbivorous.
 • Statement II: Incorrect, as the dorsal side of a frog is typically olive green with dark spots.

Q.124 (4)
New NCERT Pg. No. 112, 114
 • Anal cerci (a): Located on the 10th segment (iii).
 • Testes (b): Found in the 4th-6th segments (i).
 • Spermatheca (c): Located in the 6th segments (iv).
 • Ovaries (d): Found in the 2nd-6th segment (ii).

Q.125 (2)
Old NCERT Pg. No. 102
 Goblet cells: Are modified columnar epithelial cells found in the lining of the intestine, where they secrete mucus to protect and lubricate the lining.

Q.126 (2)
Old NCERT Pg. No. 102
 Connective tissue: The most abundant and widely distributed tissue in complex animals, providing structural support, binding tissues, and protecting organs.

Q.127 (2)
Old NCERT Pg. No. 114
 Tegmina: The hardened forewings of cockroaches, are not associated with the abdomen but with the thorax.
 The abdomen contains structures like the genital pouch, gonapophysis, and anal cerci.

Q.128 (4)
Old NCERT Pg. No. 102, 104
 • Mast cells: Are found in loose connective tissues, not in the blood.
 • Chondrocytes (1), osteocytes (2), goblet cells (3): Correct matches.

Q.129 (3)
Old NCERT Page No. 104
 Hint : Location of elastic cartilage
 Sol. : Elastic cartilage is present in the tip of nose, outer ear joints, etc. Cartilage is present in the tip of nose, outer ear joints, between adjacent bones of the vertebral column, limbs and hands in adults.

Q.130 (2)
Old NCERT Page No. 114
 In the head region, the brain is represented by supra-oesophageal ganglion.

Q.131 (3)
Old NCERT Pg. No. 103
 Blood: A connective tissue that does not secrete fibers of structural proteins; it consists mainly of plasma, which is a fluid matrix.

Q.132 (3)
Old NCERT Page No. 105
 The smooth muscle fibres taper at both ends (fusiform) and do not show striations.

Q.133 (3)
Old NCERT Pg. No. 103
 Tendon: A dense regular connective tissue that connects muscle to bone, allowing for movement.

Q.134 (1)
Old NCERT Pg. No. 102
 Hormones: Secreted by endocrine glands, not exocrine glands, which secrete substances like mucus, saliva, and milk.

Q.135 (1)

Old NCERT Pg. No. 103

Fibroblast cells: Secrete modified polysaccharides like hyaluronic acid, which act as the ground matrix in connective tissues.

SECTION-B

Q.136 (3)

Old NCERT Pg. No. 68

Stem tendrils: These are slender, coiled structures that help in climbing.

They are found in plants like cucumber, pumpkins, grapes, and watermelon. Option (3) correctly includes all these plants. In pea leaf tendrils are present.

Q.137 (3)

Old NCERT Pg. No. 67

• Hanging structures in banyan tree: These are actually prop roots, not stilt roots. Prop roots emerge from branches and grow downward, providing additional support.

• Pneumatophores (4): Correct, as they help in respiration.
• Tap roots and adventitious roots (2): Correct, as they store food.

Q.138 (1)

Old NCERT Pg. No. 71

• Tendrils (a): Used for climbing, so matched with (ii).
• Spines (b): Provide protection, so matched with (i).
• Phyllode (c): Modified leaf for photosynthesis, so matched with (iv).
• Leaf pitcher (d): Traps insects, so matched with (iii).

Q.139 (2)

Old NCERT Pg. No. 68, 71

• Thorns (a): Found in Citrus.
• Green stem (b): Found in Opuntia.
• Stem tendrils (c): Found in Cucurbits and grapes not pea.
• Underground stem (d): Found in *Colocasia*.

Q.140 (3)

New NCERT Pg. No. 58

In monocots like Wheat, the primary root is short-lived and is replaced by a fibrous root system arising from the base of the stem.

Q.141 (4)

New NCERT Pg. No. 73

In open vascular bundles of a young dicot stem, the cambium is present between the primary xylem and primary phloem, allowing for secondary growth.

Q.142 (3)

New NCERT Pg. No. 77

• Bulliform cells: When turgid, they cause leaves to unfold (not curl outwards) to maximize surface area for photosynthesis. When flaccid, they cause the leaf to fold to reduce water loss.

• Modified adaxial epidermal cells (1), large and empty (2), present along leaf veins in grasses (4): Correct.

Q.143 (1)

Old NCERT Pg. No. 88

• Companion cells: Play a crucial role in maintaining the pressure gradient necessary for the flow of sap through the sieve tubes.

• Connection with tracheids (2): Incorrect, as they are connected with sieve tubes, not tracheids.

Q.144 (1)

New NCERT Pg. No. 76, 77

• Lesser number of stomata on abaxial surface (i): Incorrect, as dicot leaves generally have more stomata on the abaxial surface (underside).

• Mesophyll differentiation (ii), variability in vein thickness (iii), and bundle sheath surrounding vascular bundle (iv): All correct.

Q.145 (4)

Old NCERT Pg. No. 85

• Leaf Primordium (A): An early leaf structure.
• Axillary bud (B): Located at the axil of leaves.
• Differentiating vascular tissue (C): Developing vascular bundles.

Q.146 (3)

Old NCERT Pg. No. 104

Muscular tissue: Contains fibers that contract in response to stimuli and then relax, enabling movement and support in the body.

Q.147 (2)

Old NCERT Pg. No. 102

Compound epithelium: Provides protection against chemical and mechanical stress and covers surfaces like the skin and buccal cavity.

It has a limited role in secretion and absorption, but it does not play a major role in these functions as indicated in statement IV, making it incorrect.

Q.148 (4)
Old NCERT Pg. No. 104

- Statement I: Incorrect, Bones have a hard and non-pliable ground substance rich in calcium salts and collagen fibres which give bone its strength.
- Statement II: Incorrect, as cartilage has a solid but pliable matrix, unlike bones.

Q.149 (2)
Old NCERT Pg. No. 103

Adipose tissue: Stores excess nutrients in the form of fat, providing insulation and energy reserves.

Q.150 (2)
Old NCERT Pg. No. 101

- Squamous epithelium (A): Found in the endothelium of blood vessels (ii).
- Cuboidal epithelium (B): Lines nephrons (i).
- Columnar epithelium (C): Lines the stomach (iv).
- Ciliated epithelium (D): Found in bronchioles (iii).

**BIOLOGY-II
SECTION-A**

Q.151 (1)
New NCERT Pg. No. 62, 63, 65

Mustard flower belong to Brassicaceae:
 Exhibits radial symmetry (actinomorphic), meaning it can be divided into two equal halves only along any plane. They are tetradynamous and have variation in length of stamen.

Q.152 (1)
New NCERT Pg. No. 60

- Stipule: A stipule is typically a small leaf-like structure at the base of the leaf stalk. It does not provide rigidity to the leaf blade; its primary function is protection during the early development stages of the leaf.
- Lamina (2): Correct, as it is the green expanded part of the leaf.
- Pulvinus (3): Correct, as it refers to the swollen leaf base in leguminous plants.
- Petiole (4): Correct, as it helps hold the leaf blade towards light for efficient photosynthesis.

Q.153 (4)
New NCERT Page 68

Axillary buds of stems may also get modified into woody, straight and pointed thorns. Thorns are found in many plants such as *Citrus*, *Bougainvillea*.

Q.154 (2)
New NCERT Pg. No.

- Inferior ovary: In the Compositae (Asteraceae) family, the ovary is inferior.
- Syngenesious: Refers to the stamens being fused by their anthers.
- Basal placentation: The ovules are attached to the base of the ovary.
- Axile placentation (3) and epigynous (4) are incorrect for Compositae, as these conditions are seen in other families like Solanaceae and Rosaceae.

Q.155 (1)
New NCERT Pg. No. 67

- Part A (Endosperm): Stores nutrients.
- Part B (Scutellum): The cotyledon in monocots.
- Part C (Coleoptile): Protective sheath covering the young shoot.
- Part D (Coleorrhiza): Protective covering of the young root.

Q.156 (4)
New NCERT Pg. No. 62, 63

- Zygomorphic (a): Cassia (III).
- Hypogynous (b): Mustard (I).
- Perigynous (c): Plum (II).
- Epigynous (d): Cucumber (IV).

Q.157 (4)
New NCERT Pg. No. 64

- Valvate (1): Correct, as seen in Calotropis.
- Twisted (2): Correct, as seen in Cotton.
- Imbricate (3): Correct, as seen in Cassia.
- Vexillary (4): Incorrect for Gulmohur; it is seen in the Fabaceae family (e.g., Pea).

Q.158 (4)
New NCERT Pg. No. 59

- Root cap (1): Correct, protects the tender apex.
- Region of elongation (2): Correct, responsible for root lengthening.
- Region of maturation (3): Correct, where root hairs develop.
- Region of meristematic activity (4): Incorrect, as it is not involved in covering the root cap but in cell division.

Q.159 (3)
New NCERT Pg. No. 61

- Palmately compound leaves: The leaflets are attached at a common point, the tip of the petiole, making this statement correct.

- Neem leaf rachis (2): Correct, as the rachis represents the midrib.
- Compound leaves (1): Correct, as incisions reach up to the midrib.
- Silk cotton (3): Incorrect, as it has multiple leaflets, attached at a common point.

Q.160 (1)

New NCERT Pg. No.

- Cruciferae (Brassicaceae): Characterized by a multicarpellary unilocular ovary that forms a siliqua fruit.
- Malvaceae: Typically has a multicarpellary multilocular ovary and a capsule fruit.

Q.161 (2)

New NCERT Pg. No. 64

- Imbricate aestivation: Sepals or petals overlap each other but not in any particular direction.
- Valvate (1): No overlap, just touching margins.
- Twisted (3): Overlap in a specific direction.
- Vexillary (4): One large petal overlaps two lateral petals.

Q.162 (1)

Old NCERT Pg. No. 87

Suberin deposition: Typically found in the endodermis (Casparian strips), not in tissues involved in radial water conduction, which are usually thin-walled, living, and cellulosic (like xylem parenchyma).

Q.163 (1)

Old NCERT Pg. No. 88

- Sieve tube elements: Associated with companion cells, not sieve cells.
- End walls perforated (2): Correct.
- Mature sieve element (3): Lacks a nucleus, correct.
- Function controlled by companion cells (4): Correct.

Q.164 (4)

Old NCERT Pg. No. 86

Parenchyma: Primarily involved in functions like photosynthesis, storage, and secretion, but not mechanical support, which is provided by tissues like sclerenchyma and collenchyma.

Q.165 (3)

Old NCERT Pg. No. 88

- Sieve tube elements: Are living cells but lack a nucleus. They function in the conduction of photosynthates in phloem.

- Vessels (1): Dead, lignified cells.
- Companion cells (2): Have a nucleus.
- Root hairs (4): Have a nucleus.

Q.166 (4)

Old NCERT Pg. No. 86

Sclerenchyma: Provides mechanical strength and is found in tissues like the hard shells of nuts and fibers. It is present in the soft pulp of guava.

Q.167 (4)

New NCERT Pg. No. 75

- The cortex in a dicot stem consists of three sub-zones:
- Hypodermis: Usually collenchymatous.
- Cortical layers: Parenchymatous cells.
- Endodermis: The innermost layer of the cortex, often storing starch.

Q.168 (1)

New NCERT Pg. No. 76

Phloem parenchyma: Generally absent in monocot stems, which have vascular bundles scattered throughout the ground tissue.

Q.169 (3)

New NCERT Pg. No. 77

- **Assertion:** Correct, as the size of vascular bundles in a dicot leaf depends on the size of the veins.
- **Reason:** Incorrect, as in a dorsiventral leaf, vascular bundles are surrounded by thick walled bundle sheath, which varies with vein size.

Q.170 (2)

New NCERT Pg. No. 74, 75, 76

- Endodermis of dicot stem: Often referred to as the starch sheath due to the presence of starch grains.
- Hypodermis in dicot root (1), sclerenchymatous hypodermis in monocot root (3), polyarch xylem bundles in monocot stem (4): Incorrectly matched.

Q.171 (4)

New NCERT Pg. No. 72

- Subsidiary cells: Are indeed specialized epidermal cells surrounding guard cells but not all epidermal cells around guard cells become subsidiary cells. This statement is incorrect.
- Guard cells (1), (2), (3): Correct characteristics.

Q.172 (2)

New NCERT Pg. No. 76

- **Assertion:** The upper surface of dorsiventral leaves is darker due to the presence of more chlorophyll.

• Reason: More stomata are found on the lower surface (correct) but this is not the reason for the darker upper surface.

Q.173 (4)

Old NCERT Pg. No. 85

• Intercalary meristem: A primary meristem found at the base of leaves or internodes, not a secondary meristem.
 • Interfascicular cambium, cork cambium, and intrafascicular cambium (1), (2), (3): All are lateral meristems involved in the secondary growth of plants.

Q.174 (4)

Old NCERT Pg. No. 102

Bronchiole: Lined with simple epithelium, not compound epithelium, which covers surfaces like the skin and inner linings of the buccal cavity and pharynx.

Q.175 (3)

Old NCERT Pg. No. 114

Cockroaches: Possess compound eyes, which provide mosaic vision, a type of vision with multiple images formed by numerous ommatidia.

Q.176 (1)

Old NCERT Pg. No. 101

Columnar epithelium: Characterized by tall, slender cells with nuclei positioned at the base. It lines surfaces involved in absorption and secretion, such as the intestines.

Q.177 (2)

New NCERT Pg. No. 82, 83

• The excretory system consists of a pair of kidneys, ureters, cloaca and urinary bladder.
 • Kidneys are compact, dark red and bean-like structures situated a little posteriorly in the body cavity on both sides of vertebral column.
 • Each kidney is composed of several structural and functional units called uriniferous tubules or nephrons.
 • Two ureters emerge from the kidneys in the male frogs. The ureters act as urinogenital duct which opens into the cloaca.

Q.178 (2)

Old NCERT Page No. 113

The haemolymph is composed of colourless plasma and haemocytes.

Q.179 (1)

Old NCERT Pg. No. 104, 105

• Muscular tissue: While it is crucial for movement, neural tissue (not muscular tissue) exerts the greatest control over the body's response to environmental changes.
 • Neurons (2), (3), (4): Correct descriptions.

Q.180 (3)

Old NCERT Pg. No. 113

The correct sequence of food passage in cockroaches: Mouth → Pharynx → Oesophagus → Crop → Gizzard. The crop stores food temporarily, and the gizzard grinds it.

Q.181 (3)

Old NCERT Pg. No. 111, 112

• Head of cockroach: Formed by the fusion of six segments, not ten.
 • Exoskeleton segments (1), pronotum location (2), chewing mouthparts (4): Correct.

Q.182 (1)

Old NCERT Pg. No. 101

• Simple epithelium: Divided into three types based on cell shape—squamous, cuboidal, and columnar.
 • Cilia on basal surface (2): Incorrect, cilia are on the apical surface.
 • PCT of nephron (3): Has microvilli, not cilia.
 • Cuboidal epithelium (4): Involved in secretion and absorption, not forming a diffusion boundary.

Q.183 (1)

Old NCERT Pg. No. 102

Compound epithelium: Has limited roles in secretion and absorption, primarily providing protection. It covers the dry surface of the skin, moist surfaces like the buccal cavity and pharynx, and the ducts of glands.

Q.184 (4)

Old NCERT Page No. 103



Areolar tissue

Q.185 (1)

New NCERT Pg. No. 103

Areolar tissue: The most widely distributed connective tissue, providing flexibility and support, filling spaces between organs, and connecting skin to muscles.

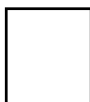


SECTION-B

Q.186 (3)

Old NCERT Pg. No. 67, 70, 71

- Pneumatophores (1): Correct, they are specialized roots that help plants like mangroves obtain oxygen in waterlogged conditions.
- Roots in *Monstera* (2): Correct, as these roots arise from parts other than the radicle.
- Australian acacia (3): Incorrect, the leaves in Australian Acacia are typically reduced, and the petioles (phyllodes) take over the photosynthetic function.
- Monocotyledons (4): Correct, as their leaf base often expands into a sheath covering the stem.



Q.187 (4)

New NCERT Pg. No. 75

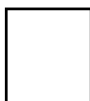
After fertilisation, the ovules develop into seeds and the ovary matures into a fruit.



Q.188 (3)

New NCERT Pg. No. 67

Stilt roots and prop roots: Both are modified adventitious roots (b) and provide mechanical support (c). They are not assimilatory (a) in function.



Q.189 (2)

New NCERT Pg. No. 62, 63

- Mustard (ii): Exhibits a superior, bicarpellary, syncarpous ovary with parietal placentation.
- Cucumber (iii): Has an inferior ovary with parietal placentation.



Q.190 (1)

New NCERT Pg. No. 60

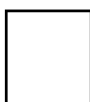
- Assertion: Correct, as dicots typically have reticulate venation.
- Reason: Correct, as the veinlets form a network in dicots, while in monocots, veins run parallel.



Q.191 (1)

Old NCERT Pg. No. 87

- Vessels: Are long, cylindrical structures formed by the fusion of vessel elements, which are efficient in conducting water.



- Thin cell walls without lignin (2): Incorrect, as vessel walls are lignified.

Q.192 (4)

Old NCERT Pg. No. 86

The given image is of Sclereid in fruit wall (4).



Q.193 (2)

New NCERT Pg. No. 72

- Assertion: Root hairs are unicellular, and trichomes are usually multicellular. Correct
- Reason: root hairs are found in the root epidermis and trichomes on the stem epidermis. Correct but does explain the assertion.



Q.194 (3)

New NCERT Pg. No. 74

- Casparian strips: Are present in the endodermis of both dicot and monocot roots, helping regulate water and nutrient uptake.



Q.195 (4)

New NCERT Pg. No. 72

Stomatal apparatus: Includes the stomatal aperture, guard cells, and subsidiary cells, but not sclerenchymatous cells, which are related to support and protection.



Q.196 (4)

New NCERT Pg. No. 80, 81, 82

- Tympanum: Present in both male and female frogs as the hearing organ.
- Vocal sacs (1) and copulatory pads (2): Present only in males, while Bidder's canal (3) is present in males as part of their reproductive system.



Q.197 (3)

Old NCERT Page No. 104

The bone marrow is present in the bone marrow cavity of long bones.

It is the site of production of blood cells, i.e. red blood corpuscles white blood corpuscles (monocytes, eosinophils, basophils and neutrophils) and platelets.



Q.198 (1)

Old NCERT Page No. 105

The wall of involuntary internal organs such as the blood vessels, stomach and intestine contains smooth type of muscle tissue.



Q.199 (2)

Old NCERT Pg. No. 105

A-Skeletal muscle: Striated, voluntary muscle attached to bones.

B-Smooth muscle: Non-striated, involuntary muscle found in the walls of internal organs.

C-Cardiac muscle: Striated, involuntary muscle found in the heart.



Q.200 (3)

Old NCERT Pg. No. 102

- All epithelial cells are held together with little intercellular material: Correct.
- Adhering junctions provide cementing to keep neighbouring cells together: Correct.
- Gap junctions prevent leakage: Incorrect, tight junctions prevent leakage.
- Tight junctions provide cytoplasmic channels: Incorrect, gap junctions do this.

