ANSWER KEY
NEET (FINAL TRACK)
PART TEST-04 (XI)

PHYSICS

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

CHEMISTRY

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

BIOLOGY -I

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

BIOLOGY-II

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

SOLUTIONS

PHYSICS
SECTION-A

Q.1 (1)

Elongation in copper wire

$$\Delta L = \frac{TL}{AY} = \frac{500\times 4}{0.25\times10^{-4}\times10^{11}}$$

$$= \frac{2000}{25\times10^{4}} = 0.8\text{mm}$$

Elongation in steel wire

$$\Delta L = \frac{TL}{AY} = \frac{500\times 2}{0.25\times10^{-4}\times2\times10^{11}}$$

$$= \frac{100}{25\times2}\times10^{-4} = 0.2\text{ mm}$$

Total elongation = 0.8 + 0.2 = 1 mm

Difference in elongation = 0.8 – 0.2 = 0.6mm

Q.2 (2)

$$\Delta\ell = \frac{F\ell}{AY} = \frac{(mg)\ell}{\frac{\pi d^2}{4}.Y}$$

$$= \frac{4\times8000\times10\times3.14}{\pi(0.25)^2\times2\times10^{11}} = 0.026\text{ mm}$$

Q.3 (4)

$$DV = \frac{1}{2}.f.DL = \frac{1}{2}F.\frac{FL}{AY} = \frac{F^2L}{2AY}$$

Q.4 (2)

Due to surface tension shape of small liquid drop is spherical and pressure inside the drop is greater then outside.

Q.5 (2)

Ideal fluid is non-viscous.

Q.6 (2)

$$(R.D.)_{metal} = \frac{W_A}{W_A - W_W} = \frac{300}{300-270}$$

Q.7 (2)

$$P_1+\frac{1}{2}\rho V_1^2=P_2+\frac{1}{2}\rho V_2^2$$

$$3.5\times10^5+0=3\times10^5+\frac{1}{2}\left(10^3\right)\rho V_2^2$$

$$V_2=10\text{ m/s}$$

Q.8 (3)

Av = constant

$$\pi R^2V=n\pi r^2v_1\Rightarrow v_1=\frac{VR^2}{nr^2}$$

Q.9 (2)

$\because$ Av = constant

$$P+\frac{1}{2}\rho v^2=\text{constant}$$

$A_1>A_2$

$v_1>v_2$

$=P_1>P_2$

Q.10 (1)

$P_1=P_2$

$$\frac{F_1}{A_1}=\frac{F_2}{A_2}\Rightarrow\frac{F_1}{r_1^2}=\frac{F_2}{r_2^2}$$

$$\Rightarrow F_1=F_2\frac{r_1^2}{r_2^2}=1350\times9.8\times\frac{5^2}{15^2}$$

Q.11 (4)

Water droplets try to minimize their surface area due to surface tension. So, the minimum surface is for sphere thats why they acquire spherical shape.

Q.12 (1)

When angle of contact is acute then liquid wets the solid.

Q.13 (2)

Work done = Surface tension × (Surface area)

Total surface area of soap bubble

$=40\times2=80\text{ cm}^2$

(Two surface)

Work done $=0.03\times80\times10^{-4}$ J

$=2.4\times10^{-4}$ J

Q.14 (1)

$$P_{ex}=\frac{4T}{r}$$

$$\frac{P_1}{P_2}=\frac{r_2}{r_1}=\frac{2}{3}$$

$$\Rightarrow\frac{\text{volume1}}{\text{volume2}}=\left(\frac{r_1}{r_2}\right)^3=\left(\frac{3}{2}\right)^3=\frac{27}{8}$$

Q.15 (3)

$$F=\eta\frac{Adv}{dy}$$

$$=3\times2\times10^{-2}\times\frac{9\times10^{-2}}{3\times10^{-3}}$$

F=1.8 N

Q.16 (4)

$$V_T\propto r^2\Rightarrow\frac{r_1}{r_2}=\left(\frac{V_{T_1}}{V_{T_2}}\right)^{\frac{1}{2}}$$

$$V\propto r^3\Rightarrow\frac{V_1}{V_2}=\left(\frac{r_1}{r_2}\right)^3=\left(\frac{3}{2}\right)^3=\frac{27}{8}$$

Q.17 (3)

When a copper ball is heated its size increases. As volume $\propto$(radius)^3 and area $\propto$(radius)^2, so percentage increase will be largest in volume. Density will decrease with rise in temperature.

Q.18 (4)

$Q=mc_{ice}\Delta T+mL+mc_W\Delta t$

$=10\times0.5\times10+10\times80+10\times1\times20$

$=50+800+200=1050$ cal

Q.19 (2)

$$T_{mix}=\frac{M_1S_1T_1+M_2S_2T_2}{M_1S_1+M_2S_2}$$

$$26=\frac{M_1S_1(30)+M_2S_2(20)}{M_1S_1+M_2S_2}$$

$(26-20)\,M_2S_2=(30-26)\,M_1S_1$

$6M_2S_2=4M_1S_1$

$$\frac{S_1}{S_2}=\frac{6M_2}{4M_1}=\frac{6}{4}\times\frac{1}{2}=\frac{3}{4}$$

Q.20 (4)

$$\left(\frac{dQ}{dt}\right)_I=\left(\frac{dQ}{dt}\right)_{II}$$

$$\frac{300A}{L}(100-T)=\frac{200A}{L}(T-0)$$

$300-3T=2T$

$T=60°C$

Q.21 (4)

$P \propto T^4 - T_0^{\,4}$

$$\frac{60}{P_2} = \frac{(1000)^4 - (500)^4}{(1500)^4 - (500)^4}$$

$P_2 = 320$ watt.

Q.22 (3)

$$W = \frac{1}{2} \times (9-4) \times 10^{-3} \times (11-3) \times 10^5$$

$W = 2000$ J

Q.23 (4)

$AQ = 4 \times 10^3 \times 4.2 = 16800$ J

$W = 4000$ J

$\Delta Q = \Delta U + W \Rightarrow \Delta U = 16800 - 4000$

$\Delta U = 12800$ J $= 12.8$ kJ

Q.24 (4)

$$W = nRT\,\ell n\,\frac{V_t}{V_i}$$

$$W = nRT\,\ell n\,\frac{5}{2} \qquad ....(1)$$

$$W' = nRT\,\ell n\,\frac{25}{10} \qquad ....(2)$$

$$\frac{W}{W'} = \frac{\ell n\,2.5}{\ell n\,2.5}$$

$W' = W$

Q.25 (3)

$H = H_2 + H_{He}$

$= \left(nC_v\Delta T\right)_{H_2} + \left(nC_v\Delta T\right)_{He}$

$$= \left[\frac{2}{2} \times \frac{5R}{2} \times 100\right] + \left[\frac{2}{4} \times \frac{3R}{2} \times 100\right] = 650 \text{ cal.}$$

Q.26 (1)

In isochoric process V=constant and $P \propto T$

$\therefore$ P-T graph is a straight line passing through origin

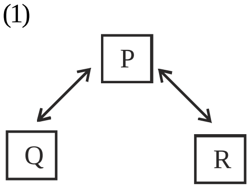
But since $P = \left[\dfrac{nR}{V}\right]T$

slope of the straight line $\propto \dfrac{1}{V}$

$(\text{slope})_{1,2} < (\text{slope})_{3,4} \quad \therefore V_2 > V_3$

Also $V_1 = V_2$ and $V_3 = V_4$

Q.27 (1)



If P and Q are in thermal equilibrium and P and R also in thermal equilibrium. Then according to zeroth law Q and R will also be in thermal equilibrium. It leads to the concept of temperature.

Q.28 (1)

Isothermal process is a slow process.

Q.29 (1)

$$P = \frac{nRT}{V}$$

$$\text{Slope} = \frac{nR}{V}$$

$$\text{Slope} \propto \frac{1}{V}$$

$(\text{Slope})_2 > (\text{Slope})_1$

$V_2 < V_1$

Q.30 (2)

$Q = \Delta U + W$

$$Q = \Delta U + \frac{Q}{4}$$

$$\Delta U = \frac{3Q}{4} = \frac{nR\Delta T}{\gamma - 1}$$

$$\frac{3Q}{4} = \frac{nR\Delta T}{\left(\frac{7}{5} - 1\right)}$$

$$\frac{3Q}{4} = \frac{5}{2} nR\Delta T$$

$$n\Delta T = \frac{6Q}{20R}$$

$$\text{Molar heat capacity, } C = \frac{Q}{n\Delta T}$$

$$C = \frac{Q}{6Q} \times 20R = \frac{10}{3}R$$

Q.31 (3)

$V_{rms} \propto \sqrt{T}$

$$\frac{V_1}{V_2} = \sqrt{\frac{T_1}{T_2}}$$

$$\frac{V_1}{V_2} = \sqrt{\frac{400}{800}} = \frac{1}{\sqrt{2}}$$

$V_2 = \sqrt{2}V_1$

Q.32 (3)

$K.E_T = 3\,K.E_{127°C}$

$$\frac{3}{2}KT = 3\left(\frac{3}{2}K(400)\right)$$

$T = 1200$ K

$T(°C) = 1200 - 273 = 927°C$

Q.33 (3)

Translational kinetic energy of n moles of monoatomic gas

$= n \times \frac{3}{2}RT = \frac{3}{2}nRT$.

Q.34 (3)

Internal energy of an ideal gas is a function of its temperature.

Q.35 (3)

$Q = nC_P \Delta T$

$\Delta U = nC_V \Delta T$

$$\frac{\Delta U}{Q} = \frac{nC_V\Delta T}{nC_V\Delta T} = \frac{C_V}{C_P}$$

$$\frac{\Delta U}{Q} = \frac{1}{\gamma} \quad = \frac{5}{7}$$

SECTION-B

Q.36 (2)

$$K = \frac{\Delta P}{\left(-\frac{\Delta V}{V}\right)} = \frac{h\rho g}{\left(-\frac{\Delta V}{V}\right)}$$

$$9.1 \times 10^8 = \frac{h \times 10^3 \times 10}{\left(\frac{0.1}{100}\right)} \Rightarrow h = 91\text{m}$$

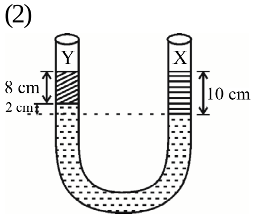
Q.37 (4)

More linear limit = More elastic

$\therefore$ Material (ii) more elastic

$\Rightarrow$ If seperation between the ultimate tension strength and fracture point is less material will be more brittle. Material (ii) is more brittle than material (i)

Q.38 (2)



$P_0 + \rho_y \times g \times 8 + 13.6 \times g \times 2$

$= P_0 + 3.36 \times g \times 10$

$\rho_y \times g \times 8 = (33.6 - 27.2)g$

$\rho_y = 0.8 \text{ g/cm}^2$

Q.39 (2)

Let out side length is x then for floating w = Th

$V\delta_B g = V_{in}\delta_2 g$

$(L \times L \times L) \times \delta g = L \times L \times (L - x) \times 3\delta \times g$

$L = 3(L - x)$

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

Q.40 (2)

$A_1V_1 = A_2V_2$

$(3A_2)V_1 = A_2V_2$

$V_2 = 3V_1 \Rightarrow V_2 = 3V$

$$P + \rho gh + \frac{1}{2}\rho v^2 = \text{const.}$$

$$\Delta P = \frac{1}{2}\rho\left(V_2^2 - V_1^2\right)$$

$$\rho g\Delta h = \frac{1}{2}\rho\left((3V)^2 - V^2\right)$$

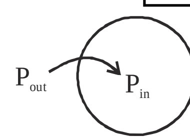
$$\Delta h = \frac{\rho(8V^2)}{2\rho g}$$

$$\Delta h = \frac{4V^2}{g}$$

Q.41 (4)

$$P_{in} = P_O + \frac{2T}{R}$$

$$P_{in} - P_O = \frac{2T}{R}$$



$$= \frac{2 \times 0.072}{1.2 \times 10^{-3}}$$

$$= \frac{72 \times 20}{12}$$

$= 120 \text{ N/m}^2$

Q.42 (1)

Latent heat of fusion is the quantity of heat required to convert unit mass of a substance from solid to liquid.

Q.43 (2)

$$\lambda_{max} \propto \frac{1}{T} \Rightarrow \frac{(\lambda_{max})_2}{(\lambda_{max})_1} = \frac{T_1}{T_2}$$

$$\frac{(\lambda_{max})_2}{4800} = \frac{6000}{3000} \Rightarrow (\lambda_{max})_2 = 9600\text{Å}$$

Q.44 (1)

In cyclic process $\Delta U = 0$

$\Delta Q = \Delta W$

$\Delta W = W_{A\to B} + W_{B\to C} + W_{C\to A}$

$W_{B\to C} = 0$ (V = constant)

$W_{A\to B} = P(V_2 - V_1)$

$= 10(2 - 1) = 10$ J

$3 = 10 + 0 + W_{C\to A}$

$W_{C\to A} = -7$ J

Q.45 (3)

In isothermal process $\Delta T = 0 \Rightarrow \Delta U = 0$
$\Delta Q = \Delta U + \Delta W \Rightarrow \Delta Q = 0 + \Delta W$
$= \Delta W \Rightarrow A \rightarrow 3, 4$
In adiabatic process, $\Delta Q = 0 \Rightarrow B \rightarrow 2$
In isochoric process, $\Delta V = 0 \Rightarrow \Delta W = P\Delta V = 0$
$\Rightarrow \Delta Q = \Delta W + \Delta U$
$\Rightarrow \Delta Q = 0 + \Delta U = \Delta U \Rightarrow C \rightarrow 1$
In cyclic process,
$= \Delta U = 0,\ \Delta Q = 0 + \Delta W = \Delta W \Rightarrow \Delta \rightarrow 3,4$

Q.46 (3)

$$\eta = \frac{1}{1+COP} = \frac{1}{1+0.25} = \frac{100}{125} = \frac{4}{5}$$

$$\eta = \frac{W}{Q_h}$$

$W = \eta Q_h$

$$= \frac{4}{5} \times 250 = 200J$$

Q.47 (1)
For an ideal gas in isobaric process
$Q = nC_p\Delta T$
$W = P\Delta V$
$= nR\Delta T$

$$\text{Required ratio} = \frac{W}{Q}$$

$$= \frac{nR\Delta T}{nC_p\Delta T}$$

$$\frac{R}{C_p} = \frac{R}{\frac{\gamma R}{(\gamma-1)}} = \frac{2}{5}$$

[Since $\gamma = \frac{5}{3}$, for monatiomic gas]

Q.48 (3)

$$\gamma_{Mono} = \frac{5}{3}, \gamma_{dia} = \frac{7}{5}$$

$\Rightarrow \gamma_{Mono} > \gamma_{dia}$ but degree of freedom is more for diatomic gas as compared to monoatomic gas.

Q.49 (2)
$PV = nRT$

$n_{O_2} = n_{H_2}$

$$\frac{64}{32} = \frac{x}{2}$$
$x = 4\ gm$

Q.50 (3)
Internal energy of an moles of an ideal gas at temperature T is given by

$U = \frac{f}{2}nRT$[f = degrees of freedom]

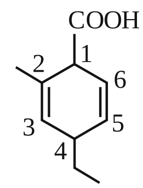
$U_1 = U_2$
$f_1n_1T_1 = f_2n_2T_2$

$$\therefore \frac{n_1}{n_2} = \frac{f_2T_2}{f_1T_1} = \frac{3\times 2T}{5\times T} = \frac{6}{5}$$

Here, f_2 = degrees of freedom of He = 3
and f_1 = degrees of freedom of H_2 = 5

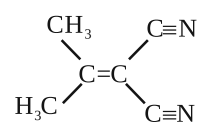
CHEMISTRY
SECTION-A

Q.51 (3)



4-ethyl -2-methyl
cyclo Hexa-2, 5-diene carboxylic acid.

Q.52 (2)



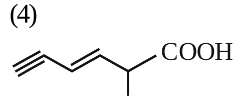
2 sp^2 hybridisation carbon atom, 5π bonds.

Q.53 (1)

$\overset{5}{CH_3} - \underset{|\atop OH}{\overset{4}{CH}} - \overset{3}{CH_2}\ \overset{2}{CH_2} - \overset{1}{COOH}$

4-hydroxy pentanoic acid

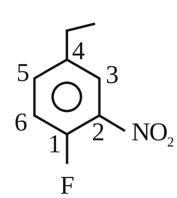
Q.54 (4)



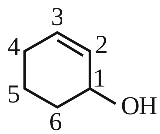
$16\ \sigma$
and $4\ \pi$ - bonds

Q.55 (1)
General formula of Alkanol is $C_nH_{2n+2}O$.

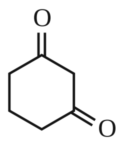
Q.56 (4)



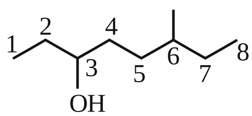
4 - ethyl - 1 - Fluoro - 2 - nitro benzene



Cyclohex - 2 - en - 1 - ol



Cyclohex - 1, 3 - dione

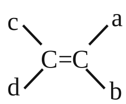


6 - methyloctan - 3 - ol

Q.57 (1)

$C_4H_6 \rightarrow$ 

Q.58 (4)
The compound which having



where $\begin{bmatrix} a \neq b \\ c \neq d \end{bmatrix}$ can show G.I.

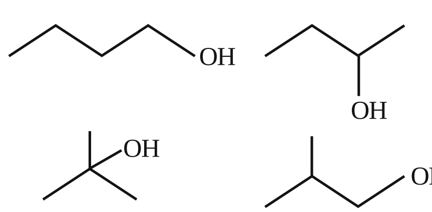
Q.59 (2)
$CH_3^{\oplus}$ and $C_2H_5-\underset{\displaystyle CH_3}{\underset{|}{CH}}-C_2H_5$ is not chiral.

Q.60 (2)
$CH_3CH_2CH_2OH$ and $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$
are position isomers of each other.

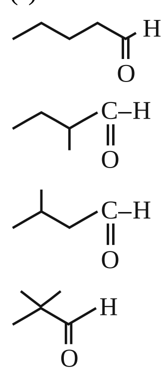
Q.61 (4)
$CH_3OC_3H_7$ and C_2H_5 - O - C_2H_5 are metamers of each other.

Q.62 (4)
Butanone is not isomeric with ether. Both have different molecular formula.

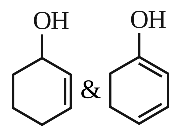
Q.63 (3)



Q.64 (2)



Q.65 (1)
CH_3CH_2OH & CH_3-O-CH_3 Functional isomers
$C_2H_5COOC_2H_5$ & $C_3H_7COOCH_3$ metamers



Not isomer

$CH_3CH_2CH_2OH$ & $CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$ Position isomer

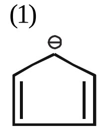
Q.66 (1)

Carbanion does not show +H effect.

Q.67 (1)

Facts

Q.68 (1)



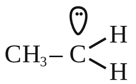
(Due to aromaticity)

Q.69 (1)
Boiling point order $\rightarrow$ n-hexane > n-pentane > 2,2-dimethyl propane > propane

Q.70 (1)
$-NH_2, -NH-\overset{\displaystyle O}{\overset{||}{C}}-R, -NR_2, -OH$
shows +R effect.

Q.71 (1)
Stability order
$CH \equiv C^{\ominus} > CH_2 = CH^{\ominus} > (CH_3)_2\,CH^{\ominus} > (CH_3)_3\,C^{\ominus}$

Q.72 (3)



C contains $\rightarrow$ 3 σ bond + 1 lone pair
So, sp^3 hybridised.

Q.73 (3)
Nitro Benzene does not give friedel - Crafts reaction.

Q.74 (1)

$$2CH_4 + O_2 \xrightarrow[100\,atm]{Cu/523K} \underset{\text{Methanol}}{2CH_3OH}$$

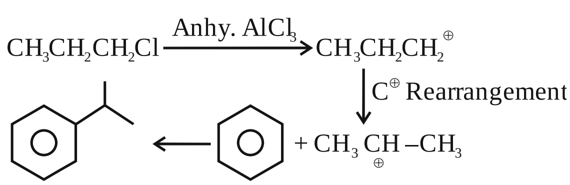
$$CH_4 + O_2 \xrightarrow[\Delta]{Mo_2O_3} \underset{\text{Methanal}}{HCHO}$$

Q.75 (4)
Reactivity towards E.S.R. $\propto$ e^- density in ring
Reactivity order $\rightarrow 4 > 1 > 3 > 2$

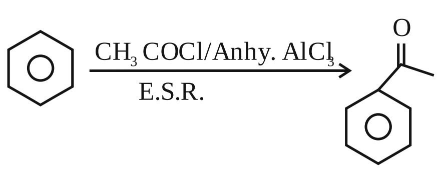
Q.76 (2)

$$2CH_3COONa \xrightarrow{\text{electrolysis}} CH_3-CH_3 + CO_2 + H_2$$

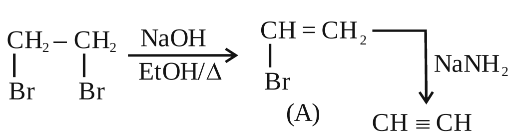
Q.77 (4)



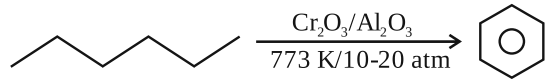
Q.78 (4)



Q.79 (4)

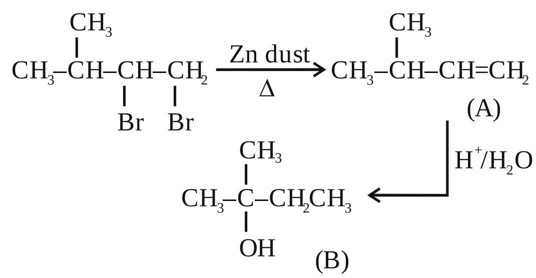


Q.80 (4)

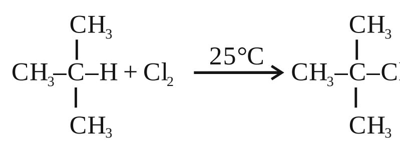


[n-Hexane] Benzene

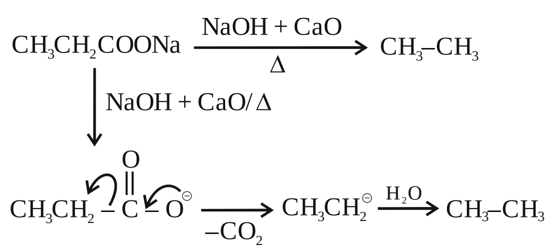
Q.81 (2)



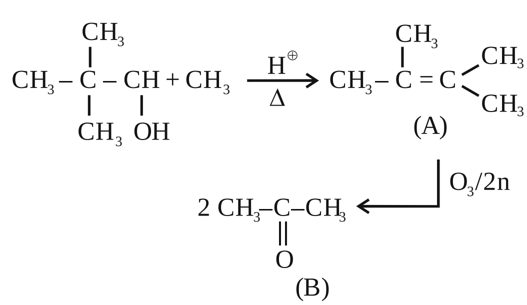
Q.82 (3)



Q.83 (4)



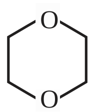
Q.84 (3)



Q.85 (1)
Cyclopentane does not give Baeyer's reagent test.

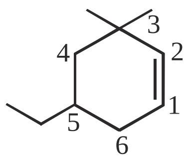
SECTION-B

Q.86 (4)



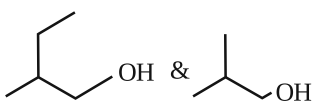
Heterocyclic compound

Q.87 (1)

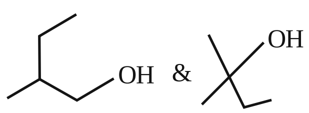


5-ethyl-3,3 dimethyl cyclohexene.

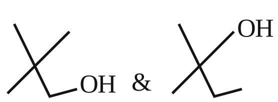
Q.88 (4)



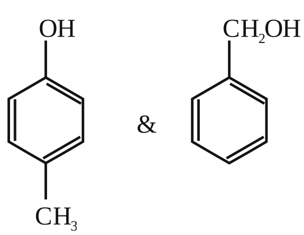
→ Homologous



→ Position isomer

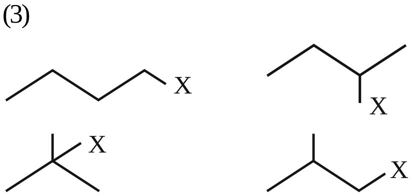


→ Chain isomer

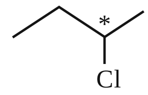


→ Function Isomers

Q.89 (3)



Q.90 (3)



optically active

Q.91 (4)
a & b → Chain isomers
b & c → Chain isomers
c & a → Position isomers

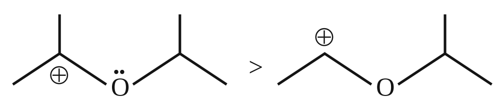
Q.92 (1)

Facts

Q.93 (4)

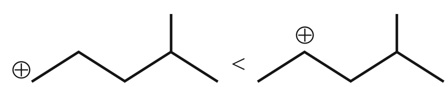
$C_6H_5-CH_3$ shows hyper-conjugation.

Q.94 (4)



(Back Bonding + 6 α H) > (Back Bonding + 3 α H)

∨

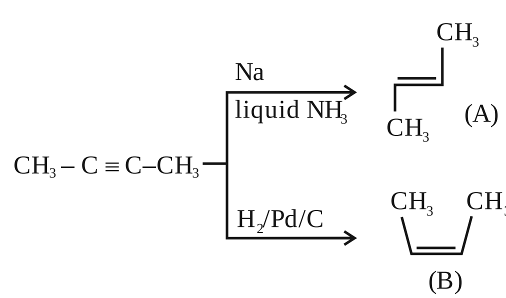


(2 α H) < 5 α H

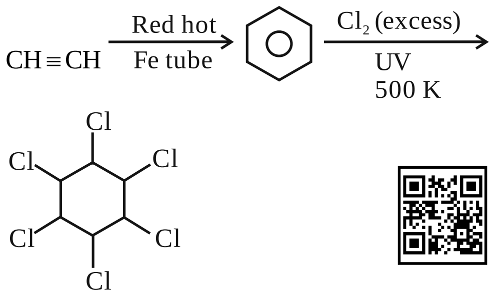
Q.95 (2)

$-NH-CH_3$, $-Cl$ and $-OH$ is ortho – para directing group.

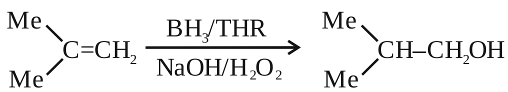
Q.96 (1)



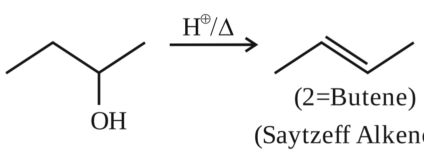
Q.97 (1)



Q.98 (2)

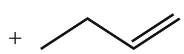


Q.99 (2)



(2=Butene)

(Saytzeff Alkene)



(1-Butene)

(Hofmann Alkene)

Q.100 (2)

$$Ph - C \equiv CH \xrightarrow[HgSO_4]{dil.H_2SO_4} Ph - \underset{\underset{O}{\|}}{C} - CH_3$$

(A)

(Acetophenone)

BIOLOGY -I
SECTION-A

Q.101 (3)
New NCERT Pg. No. 137

Chlorophyll a is the primary pigment involved in photosynthesis and appears bright or blue-green in color in chromatograms.

This pigment is crucial for the absorption of light, particularly in the blue and red regions of the spectrum, which drives the photosynthetic process.

Q.102 (3)
New NCERT Pg. No. 145

The specialized cells around the vascular bundles of maize, known as bundle sheath cells, have thick cell walls and are packed with chloroplasts to perform C4 photosynthesis. However, these cell walls do not facilitate gaseous exchange; rather, they minimize it to concentrate CO_2 and reduce photorespiration, making statement (3) incorrect.

Q.103 (2)
New NCERT Pg. No. 137

The absorption spectrum of Chlorophyll a closely matches the action spectrum of photosynthesis, as it is the main pigment that converts light energy into chemical energy during photosynthesis. It absorbs light primarily in the blue and red regions, which are the most effective for driving photosynthesis.

Q.104 (4)
New NCERT Pg. No. 140

The photochemical phase of photosynthesis, also known as the light-dependent reactions, involves light absorption, water splitting (photolysis), and oxygen release. The formation of ADP and $NADP^+$ is not associated with this phase; rather, ATP and NADPH are produced.

Q.105 (3)
New NCERT Pg. No. 150

C4 plants are adapted to high light intensities and temperatures. At low temperatures, their rate of photosynthesis is generally lower compared to C3 plants because the enzymes involved in the C4 pathway are less active. Hence, the statement that C4 plants show a higher rate of photosynthesis at very low temperatures is incorrect.

Q.106 (2)
New NCERT Pg. No. 161

The F_0 component of ATP synthase is indeed an integral membrane protein complex, but it forms a channel through which protons cross the inner membrane of mitochondria, not the outer membrane. This movement drives the synthesis of ATP from ADP and inorganic phosphate.

Q.107 (3)
New NCERT Pg. No. 137

Chlorophyll a absorbs light most efficiently in the red (around 680-700 nm) and blue-violet (around 430-450 nm) regions.

The peak absorption in the blue region coincides with the 400-500 nm range, which is why it is the correct answer.

Q.108 (4)

New NCERT Pg. No. 146

In the C4 pathway, decarboxylation of malate occurs in the bundle sheath cells, releasing CO_2 for the Calvin cycle.

This mechanism is an adaptation to minimize photorespiration by concentrating CO_2 in these cells where the Calvin cycle takes place.

Q.109 (2)

New NCERT Pg. No. 143

The regeneration of RuBP (Ribulose bisphosphate) is crucial for the uninterrupted continuation of the Calvin cycle.

Without RuBP, the cycle cannot proceed to fix more CO_2, which is essential for the synthesis of glucose.

Q.110 (4)

New NCERT Pg. No. 149

The rate of photosynthesis does not continue to increase linearly with increasing light intensity; it eventually plateaus when other factors,

such as CO_2 concentration or temperature, become limiting. Therefore, the statement suggesting a linear relationship at higher light intensities is incorrect.

Q.111 (4)

New NCERT Pg. No. 147

Assertion: Photorespiration occurs in C3 plants where CO_2 fixation occurs in mesophyll cells but is negligible in C4 plants.

Reason: C4 plants increase CO_2 concentration at the enzyme site, thereby minimizing photorespiration.

Therefore, Assertion is false but the reason is true.

Q.112 (4)

New NCERT Pg. No. 140, 141

The movement of protons (H^+) from the lumen to the stroma through CF_0 of ATP synthase is part of ATP synthesis and not the formation of the proton gradient.

The proton gradient is established by the other processes listed, so statement (3) is incorrect.

Q.113 (3)

New NCERT Pg. No. 142

ATP synthesis in chloroplasts takes place on the stroma side of the thylakoid membrane as protons move from the thylakoid lumen back into the stroma,

driving the ATP synthase enzyme to produce ATP.

Q.114 (3)

New NCERT Pg. No. 158

The Krebs cycle takes place in the mitochondrial matrix, where acetyl-CoA is fully oxidized to CO_2,

and high-energy electron carriers NADH and $FADH_2$ are produced.

Q.115 (2)

New NCERT Pg. No. 159

In the Krebs cycle, the conversion of succinic acid to malic acid involves the oxidation of FAD to $FADH_2$, but it does not involve the synthesis of NADH.

Q.116 (3)

New NCERT Pg. No. 158

FAD^+ is not directly required for

the activity of pyruvate dehydrogenase. This enzyme complex requires NAD^+, Coenzyme A, and Mg^{+2} as cofactors to convert pyruvate into acetyl-CoA.

Q.117 (2)

New NCERT Pg. No. 164

Tripalmitin, a triglyceride,

undergoes complete oxidation to produce 102 molecules of CO_2. This number comes from the complete oxidation of each fatty acid chain and the glycerol backbone.

Q.118 (3)

New NCERT Pg. No. 158

During the conversion of

3-phosphoglyceraldehyde (PGAL) to 1,3-bisphosphoglycerate (BPGA) in glycolysis, two redox equivalents (NAD^+ to NADH) are removed. This step is crucial for maintaining the balance of NADH in the cell.

Q.119 (2)

New NCERT Pg. No. 161

Complex V of the mitochondrial

electron transport system, also known as ATP synthase, is responsible for producing ATP from ADP and inorganic phosphate by utilizing the proton gradient established by the previous complexes.

Q.120 (4)

New NCERT Pg. No. 158

Hexokinase catalyzes the first

irreversible step in glycolysis, converting Glucose to Glucose-6-phosphate, which commits the glucose molecule to glycolysis.

Q.121 (3)
New NCERT Pg. No. 159
One turn of the Krebs cycle generates 12 ATP equivalents, considering the production of NADH, $FADH_2$, and GTP. The complete oxidation of one glucose molecule through the Krebs cycle contributes to the overall energy yield of cellular respiration.

Q.122 (4)
New NCERT Pg. No. 163
The Respiratory Quotient (RQ) is calculated as the ratio of the volume of CO_2 evolved to the volume of O_2 consumed during respiration. This ratio provides insights into the type of substrate being metabolized.

Q.123 (4)
New NCERT Pg. No. 156
Glucose is phosphorylated to glucose -6-phosphate by the enzyme hexokinase, not an isomerase. This phosphorylation is the first step of glycolysis and is essential for trapping glucose within the cell.

Q.124 (3)
New NCERT Pg. No. 160
In the electron transport system, Complex I is NADH dehydrogenase, and Complex IV is cytochrome c oxidase. These complexes play critical roles in the transfer of electrons and the establishment of the proton gradient.

Q.125 (2)
New NCERT Pg. No. 162
During fermentation, NADH oxidation occurs slowly due to the low efficiency of ATP production. In contrast, during aerobic respiration, NADH oxidation is very vigorous, driving the efficient production of ATP.

Q.126 (1)
New NCERT Pg. No. 163
Assertion: When carbohydrates are used as a respiratory substrate and completely oxidized, the RQ will be 1.
Reason: Complete oxidation of carbohydrates results in equal amounts of CO_2 evolved and O_2 consumed.
Both assertion and reason are true, and the reason correctly explains the assertion.

Q.127 (1)
New NCERT Pg. No. 156
Assertion: ATP is used at two steps in glycolysis.
Reason: The first ATP is used in converting glucose into glucose-6-phosphate, and the second ATP is used in converting fructose-6-phosphate into fructose-1,6-diphosphate.
Both statements are true, and the reason correctly explains the assertion.

Q.128 (2)
New NCERT Pg. No. 175, 176, 177
Auxin is present in root and shoot apices (iv).
Cytokinin promotes adventitious shoot formation (iii).
Gibberellin increases the length of grape stalks (i).
Abscisic acid induces dormancy (ii).

Q.129 (2)
New NCERT Pg. No. 171
Absolute growth rate refers to the total growth per unit time, providing a measure of the overall increase in size or biomass over a specific period.

Q.130 (3)
New NCERT Pg. No. 170
In the equation $W_1 = W_0e^{rt}$, r is the exponential growth rate constant and is referred to as the efficiency index. r is the relative growth rate and is also the measure of the ability of the plant to produce new plant material, referred to as efficiency index.

Q.131 (3)
New NCERT Pg. No. 175
Hint: Ethylene is a gaseous plant hormone.
Cousins discovered and confirmed that release of ethylene, a volatile substance, from ripened oranges hastened the ripening of unripe bananas kept nearby. Later on this volatile substance was identified as ethylene.

Q.132 (2)
New NCERT Pg. No. 177
Assertion: Ethylene breaks seed and bud dormancy and initiates germination in peanut seeds.
Reason: Ethylene promotes rapid internode elongation/petiole elongation in deep-water rice plants.
While both statements are true, the reason does not directly explain the assertion.

Q.133 (3)
New NCERT Pg. No. 177
Ethephon is a plant growth regulator that releases ethylene and is used to promote female flower development in cucumbers, leading to increased yield.

Q.134 (3)
New NCERT Pg. No. 176, 177

Ethephon is a fruit ripener (iv).
2, 4-D is a herbicide (iii).
GA3 is a bolting agent (ii).
Abscisic acid is a stress hormone (i).

Q.135 (2)
New NCERT Pg. No. 173

The diagrams illustrate environmental heterophylly, where leaf forms change in response to different environmental conditions, such as variations in light or water availability.

SECTION-B

Q.136 (3)
New NCERT Pg. No. 145

In Kranz anatomy characteristic of C4 plants, the bundle sheath cells have thick walls, no intercellular spaces, and are packed with chloroplasts to efficiently perform the Calvin cycle and reduce photorespiration.

Q.137 (2)
New NCERT Pg. No. 143, 144

The Calvin cycle occur in all photosynthetic plants. The primary acceptor of CO_2 is 5 carbon compound RuBP which accepts CO_2 to form PGA. This step does not require ATP or $NADPH_2$.

Q.138 (2)
New NCERT Pg. No. 147

The oxygenation activity of RuBisCO in photorespiration leads to the formation of one molecule of 3-phosphoglycerate (a 3-C compound) and one molecule of 2-phosphoglycolate (a 2-C compound).

Q.139 (1)
New NCERT Pg. No. 139

Water (H_2O) is the external electron donor in non-cyclic photophosphorylation. It is split during photolysis, providing electrons to PS-II and releasing oxygen as a by-product.

Q.140 (3)
New NCERT Pg. No. 135

Cornelius van Niel was the first to propose that in photosynthesis, hydrogen from a suitable oxidizable compound reduces CO_2 to carbohydrates. His work on green sulfur bacteria provided evidence for this mechanism.

Q.141 (2)
New NCERT Pg. No. 160

Oxygen is the final hydrogen (and electron) acceptor in the mitochondrial electron transport chain, forming water as the end product.

Q.142 (4)
New NCERT Pg. No. 157

Assertion: There is no net production of $NADH+H^+$ during anaerobic respiration in yeast cells.
Reason: During alcohol fermentation, acetaldehyde is reduced to ethanol by using $NADH+H^+$, which was produced during glycolysis. Both statements are true, and the reason correctly explains the assertion.

Q.143 (3)
New NCERT Pg. No. 159

During the conversion of Succinyl CoA to Succinic acid in the TCA cycle, GTP (which can be converted to ATP) is synthesized.

Q.144 (2)
New NCERT Pg. No. 154

Energy from the respiratory substrates is not released in a single step but through a series of controlled, enzyme-catalyzed reactions. Statement (2) is incorrect.

Q.145 (4)
New NCERT Pg. No. 160

Complex V (ATP synthase) does not pump protons; instead, it allows protons to flow back into the mitochondrial matrix to synthesize ATP. The other complexes (I, III, IV) act as proton pumps.

Q.146 (1)
New NCERT Pg. No. 175

Indole-3-acetic acid (IAA) is used to prevent the abscission of young organs like leaves and fruits, thereby preventing their premature fall.

Q.147 (3)
New NCERT Pg. No. 175

Abscisic acid (ABA) is also known as Inhibitor-B, abscission II, and dormin, all of which refer to its role in inducing dormancy and abscission.

Q.148 (1)
New NCERT Pg. No. 177

Ethylene is associated with climacteric respiration, a phase of increased respiration rate during the ripening of climactic fruits such as bananas and tomatoes.

Q.149 (4)
New NCERT Pg. No. 175

Indole-3-acetic acid (IAA) and Indole-3-butyric acid (IBA) are naturally occurring auxins, while Naphthaleneacetic acid (NAA) and 2,4-Dichlorophenoxyacetic acid (2,4-D) are synthetic auxins.

Q.150 (3)
New NCERT Pg. No. 176

2,4-D is a selective herbicide that kills dicot weeds without harming monocot plants, making it useful for creating weed-free lawns.

BIOLOGY-II
SECTION-A

Q.151 (3)
New NCERT Pg. No. 150

At low light intensities, both C_3 and C_4 plants show increase in the rates of photosynthesis.
The C_4 plants show saturation at about 360 μlL^{-1} while C_3 responds to increased CO_2 concentration and saturation is seen only beyond 450 μlL^{-1}.

Q.152 (2)
New NCERT Pg. No. 140

The chemiosmotic process for ATP synthesis requires a membrane, a proton gradient, and a proton pump. An electron gradient is not directly required for ATP synthesis; instead, it is the proton gradient that drives the process. Therefore, (2) is incorrect.

Q.153 (4)
New NCERT Pg. No. 146

The first stable product of CO_2 fixation in the C4 pathway (as in maize) is oxaloacetic acid (OAA), a four-carbon compound, which is later converted into malate or aspartate before entering the Calvin cycle.

Q.154 (2)
New NCERT Pg. No. 138

The light reaction of photosynthesis produces oxygen, ATP, and NADPH but not carbon dioxide. CO_2 is actually consumed during the Calvin cycle, which occurs after the light reaction.

Q.155 (1)
New NCERT Pg. No. 134

Jan Ingenhousz demonstrated that sunlight is essential for the process of photosynthesis by showing that plants release oxygen in the presence of light. He used bell Jar experiments to prove this.

Q.156 (3)
New NCERT Pg. No. 140

Cyclic photophosphorylation takes place to balance the ATP/NADPH ratio needed for the Calvin cycle, and Stroma lamellae only have PS-I, lacking PS-II and NADP reductase. Therefore, statements A and D are correct.

Q.157 (4)
New NCERT Pg. No. 141

Assertion is incorrect because in chemiosmotic hypothesis there is movement of electrons due to which there is transport of protons across the membrane.
Reason is correct as the primary acceptor of electron is located towards outer side of membrane.

Q.158 (4)
New NCERT Pg. No. 140, 144, 145

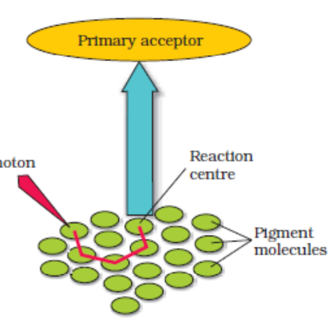
Cyclic photophosphorylation involves only PS-I (A).
Non-cyclic photophosphorylation involves both PS-I and PS-II (B).
C4 cycle involves the first CO_2 fixation by PEPcase (D).
C3 cycle involves the first CO_2 fixation by RuBisCO (C).
Therefore, the correct matching is A-B-D-C.

Q.159 (1)
New NCERT Pg. No. 144

During the regeneration phase of the Calvin cycle, 6 ATP molecules are used to regenerate RuBP from glyceraldehyde-3-phosphate (G3P) for every glucose molecule synthesized.

Q.160 (1)
New NCERT Pg. No. 138

In a photosystem, A represents the reaction center, where the primary photochemical reaction occurs, and B represents the pigment molecules that capture light energy and transfer it to the reaction center.



Q.161 (3)
New NCERT Pg. No. 142

The energy released during the breakdown of the proton gradient causes a conformational change in the CF_1 component of ATP synthase, leading to the synthesis of ATP from ADP and inorganic phosphate.

Q.162 (3)
New NCERT Pg. No. 135

To form six molecules of glucose, 36 CO_2 molecules are required. This calculation comes from the fact that each molecule of glucose requires six CO_2 molecules.

Q.163 (3)
New NCERT Pg. No. 136

The membranous system of grana in chloroplasts is responsible for trapping light energy and converting it into chemical energy in the form of ATP, which is then used in the Calvin cycle to synthesize sugars.

Q.164 (1)
New NCERT Pg. No. 157

Statement 1 is incorrect because lactic acid formation occurs in anaerobic conditions when oxygen is insufficient, not when it is adequate. The other statements correctly describe aspects of anaerobic respiration and fermentation.

Q.165 (1)
New NCERT Pg. No. 155

Glycolysis is the process where glucose undergoes partial oxidation to form two molecules of pyruvic acid. This process occurs in the cytoplasm and is the first step in both aerobic and anaerobic respiration.

Q.166 (3)
New NCERT Pg. No. 159

The first step of aerobic respiration (glycolysis) occurs in the cytosol, while the second step (Krebs cycle) occurs in the mitochondrial matrix. Therefore, statement (3) is incorrect.

Q.167 (2)
New NCERT Pg. No. 159

During the conversion of succinic acid to malic acid in the Krebs cycle, FAD^+ is reduced to $FADH_2$, and this step does not involve the production of NADH.

Q.168 (1)
New NCERT Pg. No. 157

Fermentation takes place under anaerobic conditions in many prokaryotes and unicellular eukaryotes.
In animal cells also, like muscles during exercise, when oxygen is inadequate for cellular respiration pyruvic acid is reduced to lactic acid by lactate dehydrogenase.

Q.169 (2)
New NCERT Pg. No. 162

The carbon skeletons produced during respiration are used as precursors for the biosynthesis of various biomolecules, including amino acids, nucleotides, and lipids.

Q.170 (2)
New NCERT Pg. No. 157

Assertion: The incomplete oxidation of glucose is achieved under anaerobic conditions where pyruvic acid is converted to CO_2 and ethanol.
Reason: Enzymes like pyruvic acid decarboxylase and alcohol dehydrogenase catalyze the reactions in fermentation.
Both statements are true, but the reason do not explains the assertion.

Q.171 (1)
New NCERT Pg. No. 156, 158, 159

Glycolysis occurs in the cytoplasm (D).
Pyruvate to Acetyl CoA occurs in the mitochondrial matrix (C).
Electron Transport System is located in the inner mitochondrial membrane (A).
ATP synthesis occurs at the F_1 headpiece of Complex V of ETS (B).

Q.172 (3)
New NCERT Pg. No. 163

Fatty acids are first broken down into Acetyl Co-A via beta-oxidation before entering the Krebs cycle for further oxidation to generate energy.

Q.173 (3)
New NCERT Pg. No. 157

In anaerobic respiration, the oxidation of NADH is not vigorous; it is limited due to the absence of an electron transport chain. Therefore, statement (3) is incorrect.

Q.174 (3)
New NCERT Pg. No. 160

Cytochrome c acts as a mobile electron carrier, transferring electrons between Complex III and Complex IV in the electron transport chain during aerobic respiration.

Q.175 (4)
New NCERT Pg. No. 158
Before entering the TCA cycle, pyruvate undergoes oxidative decarboxylation to form Acetyl CoA. This process involves the removal of a carboxyl group, releasing CO_2.

Q.176 (4)
New NCERT Page 160
Electrons from NADH produced in the mitochondrial matrix during the TCA cycle are oxidised by complex I, and electrons are then transferred to ubiquinone.

Q.177 (3)
New NCERT Pg. No. 168, 170
In geometric growth, both daughter cells continue to divide, leading to exponential growth. The statement that only one daughter cell divides while the other differentiates is incorrect.

Q.178 (1)
New NCERT Pg. No. 177
Abscisic acid (ABA) helps seeds withstand desiccation and other unfavorable environmental conditions by inducing dormancy. It is also known as stress hormone.

Q.179 (3)
New NCERT Pg. No. 177
Ethylene influences the swelling of the axis, horizontal growth of seedlings, and the formation of an apical hook in dicot plants called Triple response.

Q.180 (1)
New NCERT Pg. No. 174
The full form of IAA is Indole-3-acetic acid, a naturally occurring auxin that plays a critical role in plant growth and development.

Q.181 (4)
New NCERT Pg. No. 173
Assertion: Buttercup plants show heterophylly.
Reason: This heterophylly is due to environmental factors.
Both statements are true, and the reason correctly explains the assertion.

Q.182 (2)
New NCERT Pg. No. 167
Assertion: Differentiation in plants is open.
Reason: Meristems continuously divide and add new cells to the plant body.
Both statements are true, and the reason correctly explains the assertion.

Q.183 (3)
New NCERT Pg. No. 177
Cytokinins (CK) promote nutrient mobilization, delay leaf senescence, and help overcome apical dominance by promoting lateral bud growth.

Q.184 (1)
New NCERT Pg. No. 175
The removal of shoot tips, known as decapicitation, promotes the growth of lateral buds and is widely applied in tea plantations and hedge making to encourage bushy growth.

Q.185 (3)
New NCERT Pg. No. 174, 175
- F.W. Went (ii) discovered the Avena (oat) coleoptile test for auxins.
- E. Kurosawa (iv) discovered the rice "bakanae" disease caused by gibberellins.
- Charles & Francis Darwin (i) studied the phototropic response in canary grass.
- F. Skoog (iii) worked with tobacco to study the effects of cytokinins.

SECTION-B

Q.186 (3)
New NCERT Pg. No. 146
In the Hatch and Slack pathway (C4 cycle), RuBP is the primary CO_2 acceptor in the bundle sheath cells, where the Calvin cycle takes place after initial CO_2 fixation in the mesophyll cells.

Q.187 (4)
New NCERT Pg. No. 143
Statement I is correct: RuBisCO can function as both a carboxylase and oxygenase, but not simultaneously.
Statement II is incorrect: the active site of RuBisCO can bind to either CO_2 or O_2, but not both at the same time.

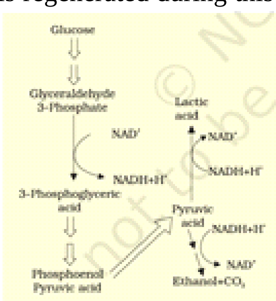
Q.188 (3)
New NCERT Pg. No. 137
Paper chromatography is used to separate the different pigments present in the leaves of green plants based on their solubility and affinity to the solvent and paper.

Q.189 (4)
New NCERT Pg. No. 134
Jan Ingenhousz demonstrated that the green parts of plants release oxygen in the presence of light, providing the first evidence that light is essential for the process of photosynthesis.

Q.190 (1)
New NCERT Pg. No. 147
Photorespiration consumes oxygen, releases CO_2, and does not produce ATP or NADPH. It occurs in the chloroplasts, peroxisomes, and mitochondria of C3 plants, not in all photosynthetic plants.

Q.191 (1)
New NCERT Pg. No. 162
Statement I: The respiratory pathway is amphibolic, meaning it involves both catabolic and anabolic processes.
Statement II: Respiratory intermediates like acetyl CoA serve as links between catabolic and anabolic pathways. Both statements are correct.

Q.192 (2)
New NCERT Pg. No. 158
NADH + H^+ is involved in the reduction of pyruvate to lactic acid during fermentation. PEP is involved in glycolysis, and NAD^+ is regenerated during this process.



Q.193 (1)
New NCERT Pg. No. 156
During glycolysis, NADH + H^+ is formed when 3-phosphoglyceraldehyde (PGAL) is oxidized to 1,3-bisphosphoglycerate (BPGA).

Q.194 (1)
New NCERT Pg. No. 155
Statement I: All living organisms have the enzymatic machinery to oxidize glucose without oxygen.
Statement II: Glycolysis is a common pathway for both aerobic and anaerobic respiration. Both statements are correct.

Q.195 (1)
New NCERT Pg. No. 159
One turn of the Krebs cycle results in the production of 2 CO_2, 3 NADH, 3 H^+, 1 $FADH_2$, and 1 ATP (or GTP).

Q.196 (1)
New NCERT Pg. No. 170
Arithmetic growth is represented by a straight-line graph, indicating a constant rate of growth over time, with equal increments of growth during each time period.

Q.197 (1)
New NCERT Pg. No. 168
Maize root tip (i) is measured by the number of cells.
Watermelon (ii) is measured by the size of cells.
Pollen tube (iii) is measured by length.
Dorsiventral leaf (iv) is measured by surface area.

Q.198 (4)
New NCERT Pg. No. 176
Zeatin is a naturally occurring cytokinin found in plants, while kinetin is a synthetic cytokinin, first isolated from herring sperm DNA.

Q.199 (2)
New NCERT Pg. No. 176
Gibberellins (GA) are involved in the elongation and improvement of the shape of apple fruit, promoting cell elongation and division.

Q.200 (4)
New NCERT Pg. No. 168
Cell type is not a basis for the measurement of growth. Growth is typically measured in terms of dry weight, cell number, volume, or other quantitative parameters.