ANSWER KEY

AITS (NEET) Final Track (XI)

Part Test-04

PHYSICS

SECTION-A

Q.1 (3)	**Q.2** (4)	**Q.3** (2)	**Q.4** (1)	**Q.5** (4)	**Q.6** (1)	**Q.7** (4)	**Q.8** (1)	**Q.9** (4)	**Q.10** (3)
Q.11 (3)	**Q.12** (2)	**Q.13** (2)	**Q.14** (3)	**Q.15** (4)	**Q.16** (1)	**Q.17** (2)	**Q.18** (2)	**Q.19** (4)	**Q.20** (1)
Q.21 (4)	**Q.22** (2)	**Q.23** (1)	**Q.24** (4)	**Q.25** (2)	**Q.26** (1)	**Q.27** (1)	**Q.28** (1)	**Q.29** (2)	**Q.30** (1)
Q.31 (2)	**Q.32** (2)	**Q.33** (4)	**Q.34** (3)	**Q.35** (3)					

SECTION-B

Q.36 (4)	**Q.37** (3)	**Q.38** (3)	**Q.39** (4)	**Q.40** (3)	**Q.41** (2)	**Q.42** (1)	**Q.43** (1)	**Q.44** (2)	**Q.45** (3)
Q.46 (2)	**Q.47** (3)	**Q.48** (2)	**Q.49 (2)**	**Q.50** (2)					

CHEMISTRY

SECTION-A

Q.51 (2)	**Q.52** (1)	**Q.53** (2)	**Q.54** (4)	**Q.55** (2)	**Q.56** (4)	**Q.57** (2)	**Q.58** (4)	**Q.59** (1)	**Q.60** (3)
Q.61 (4)	**Q.62** (2)	**Q.63** (4)	**Q.64** (3)	**Q.65** (4)	**Q.66** (4)	**Q.67** (3)	**Q.68** (4)	**Q.69** (1)	**Q.70** (1)
Q.71 (2)	**Q.72** (4)	**Q.73** (4)	**Q.74** (2)	**Q.75** (2)	**Q.76** (2)	**Q.77** (3)	**Q.78** (3)	**Q.79** (1)	**Q.80** (3)
Q.81 (2)	**Q.82** (1)	**Q.83** (3)	**Q.84** (3)	**Q.85** (4)					

SECTION-B

Q.86 (1)	**Q.87** (2)	**Q.88** (1)	**Q.89** (1)	**Q.90** (4)	**Q.91** (3)	**Q.92** (3)	**Q.93** (4)	**Q.94** (2)	**Q.95** (2)
Q.96 (3)	**Q.97** (2)	**Q.98** (2)	**Q.99** (2)	**Q.100** (3)					

BIOLOGY-I

SECTION-A

Q.101 (2)	**Q.102** (2)	**Q.103** (2)	**Q.104** (2)	**Q.105** (3)	**Q.106** (2)	**Q.107** (1)	**Q.108** (3)	**Q.109** (3)	**Q.110** (3)
Q.111 (4)	**Q.112** (2)	**Q.113** (2)	**Q.114** (4)	**Q.115** (4)	**Q.116** (4)	**Q.117** (4)	**Q.118** (1)	**Q.119** (4)	**Q.120** (3)
Q.121 (3)	**Q.122** (2)	**Q.123** (4)	**Q.124** (2)	**Q.125** (4)	**Q.126** (1)	**Q.127** (2)	**Q.128** (2)	**Q.129** (3)	**Q.130** (2)
Q.131 (3)	**Q.132** (3)	**Q.133** (1)	**Q.134** (4)	**Q.135** (3)					

SECTION-B

Q.136 (1)	**Q.137** (2)	**Q.138** (4)	**Q.139** (3)	**Q.140** (1)	**Q.141** (4)	**Q.142** (3)	**Q.143** (2)	**Q.144** (3)	**Q.145** (2)
Q.146 (4)	**Q.147** (4)	**Q.148** (2)	**Q.149** (1)	**Q.150** (3)					

BIOLOGY-II

SECTION-A

Q.151 (2)	**Q.152** (2)	**Q.153** (3)	**Q.154** (3)	**Q.155** (1)	**Q.156** (2)	**Q.157** (1)	**Q.158** (2)	**Q.159** (1)	**Q.160** (2)
Q.161 (4)	**Q.162** (3)	**Q.163** (4)	**Q.164** (3)	**Q.165** (2)	**Q.166** (3)	**Q.167** (4)	**Q.168** (1)	**Q.169** (3)	**Q.170** (3)
Q.171 (3)	**Q.172** (2)	**Q.173** (1)	**Q.174** (3)	**Q.175** (3)	**Q.176** (4)	**Q.177** (4)	**Q.178** (1)	**Q.179** (2)	**Q.180** (1)
Q.181 (2)	**Q.182** (2)	**Q.183** (4)	**Q.184 (2)**						
Q.185 (4)									

SECTION-B

Q.186 (4)	**Q.187** (2)	**Q.188** (4)	**Q.189** (2)	**Q.190** (1)	**Q.191** (2)	**Q.192** (2)	**Q.193** (1)	**Q.194** (2)	**Q.195** (4)
Q.196 (4)	**Q.197** (2)	**Q.198** (2)	**Q.199** (1)	**Q.200** (4)					

PHYSICS

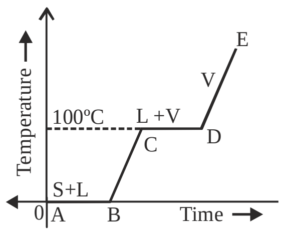
SECTION-A

17-Calorimetry

Q.1 (3)

A gas may under go through infinite processes such process defines different value of specific heat.

Q.2 (4)



$S \rightarrow$ Solid

$L \rightarrow$ Liquid

$V \rightarrow$ Vapour

Q.3 (2)

$$\because \left(\frac{\Delta Q}{\Delta t}\right)_A = \left(\frac{\Delta Q}{\Delta t}\right)_B$$

$$\therefore \frac{K_A A(100-70)}{30} = \frac{K_B A(70-35)}{70}$$

$$\Rightarrow K_A = \frac{K_B}{2} \Rightarrow \frac{K_A}{K_B} = \frac{1}{2}$$

Q.4 (1)

Transfer of heat due to radiation doesn't require any medium.

Q.5 (4)

$$S = \frac{\sigma \times 4\pi R^2 \times T^4}{4 \times D^2}$$

$$S \propto R^2 T^4$$

$$\frac{S_1}{S_1} = \left(\frac{2R}{R}\right)^2 \times \left(\frac{2T}{T}\right)^4 = 64$$

Q.6 (1)

$$\frac{52-36}{10} = K\left[\frac{52+36}{2} - 20\right] \quad .....(1)$$

$$\frac{36-T}{10} = K\left[\frac{36+T}{2} - 20\right] \quad .....(2)$$

On solving equation (1) and (2) T = 28°C

Q.7 (4)

$$\frac{K.E_R}{E} = \frac{2 \times \frac{1}{2} KT}{7 \times \frac{1}{2} KT} = \frac{2}{7}$$

Q.8 (1)

For ideal gas PV = nRT

n = 1 PV = RT

Slope of PV versus T graph is R

PV = 8.314 T

So with respect to PV = T graph

PV = 8.314 T is having more slope So answer (1)

Q.9 (4)

P^6V^5 = const.

$$\Rightarrow PV^{\frac{5}{6}} = \text{const.}$$

$$\text{Now } C = C_v + \frac{R}{1-x} = \frac{3}{2} + R\frac{R}{1-\frac{5}{6}}\frac{15R}{2}$$

Heat supplied, $Q = nC\Delta T$

$$= n\left(\frac{15R}{2}\right)(5) = 37.5 \text{ nR}.$$

Q.10 (3)

$$v_{rms} = \sqrt{\frac{3RT}{M_W}}$$

$$v_{sound} = \sqrt{\frac{\gamma RT}{M_W}}$$

$$\text{where } \gamma = 1 + \frac{2}{f} = 1 + \frac{2}{6} = \left(\frac{4}{3}\right)$$

$$\frac{v_{sound}}{v_{rms}} = \sqrt{\frac{4}{3 \times 3}} = \frac{2}{3}$$

$$v_{sound} = \frac{2}{3} v_{rms}$$

Q.11 (3)

$$V_{rms} = \sqrt{\frac{3P}{\rho}} = \sqrt{\frac{3PV}{M}}$$

M = const.

$$\Rightarrow V_{rms} \ \alpha \sqrt{PV} \Rightarrow \frac{V_{rms_2}}{V_{rms_2}} = \sqrt{\frac{2 \times 2}{1 \times 1}} = \frac{2}{1}$$

Q.12 (2)

$Q_P = nC_P (T_2 - T_1)$

$$140 = n\frac{7}{2}R(T_2 - T_1)$$

$$w = nR\,(T_2 - T_1) = 40\text{ J}$$

Q.13 (2)

$$E_{avg} = \frac{fKT}{2} \text{ for per molecule}$$

$$V_{rms} = \sqrt{\frac{3RT}{M}}$$

Q.14 (3)

$PV = nRT$

$$\frac{V}{T} = \frac{nR}{P}$$

$$\text{Slope} = \frac{n}{P}$$

$$\tan 60^o \frac{n_A}{P_A}$$

$$\tan 30^o \frac{n_B}{P_B} \quad \therefore \frac{P_A}{P_B} = 1$$

Q.15 (4)

$\because PV = nRT$

or $PV = RT$

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

Now, finally.

$$P' = \frac{RT'}{V'} = \frac{R \times 1.1T}{1.05V} = \frac{1.1}{1.05}P$$

Q.16 (1)

$200 = Q_1 - 200 = Q_2 - 100 \Rightarrow Q_1 = 400\text{ J}, Q_2 = 300\text{ J}$

Q.17 (2)

At P = Constant

$$\Rightarrow \frac{\Delta W_p}{\Delta Q_p} = \frac{2}{f+2} \Rightarrow \frac{\Delta W}{140} = \frac{2}{5+2}$$

$$\Rightarrow \Delta W = 40\text{ J}$$

Q.18 (2)

Sol. $$\Delta U = \frac{nfR\Delta T}{2} = 0$$

$$\Rightarrow \Delta T = 0 \Rightarrow \text{Isothermal process}$$

$$P \propto \frac{1}{V}$$

Q.19 (4)

work done = Area under the P-V curve

$$W = \frac{1}{2}(80 \times 10^3)(250 \times 10^{-6}) = 10\text{ J}$$

Since the arrow is anticlockwise,

$\therefore$ work done = – 10 J

Q.20 (1)

$$U = \frac{f}{2}nRT$$

For isothermal process, to increase internal energy, no. of molecules should be increased.

Q.21 (4)

$$Y = \frac{FL}{A(\Delta\ell)} = \frac{WL}{\pi r^2 \Delta\ell}$$

$$\therefore \Delta\ell = \frac{WL}{\pi r^2 Y}$$

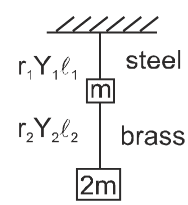
$\Delta\ell$ will be minimum for that wire whose $\frac{W}{r^2}$ is minimum.

Q.22 (2)

$$\frac{r_1}{r_2} = b$$

$$\frac{\ell_1}{\ell_2} = a$$

$$\frac{Y_1}{Y_2} = c$$



$$\Delta\ell_1 = \frac{(3mg)\ell_1}{A_1Y_1}$$

$$\Delta\ell_2 = \frac{(2mg)\ell_2}{A_2Y_2}$$

$$\frac{\Delta\ell_1}{\Delta\ell_2} = \frac{3\ell_1}{2\ell_2 A_1Y_1} \times A_2Y_2 = \frac{3}{2}\frac{a}{b^2c} = \frac{3a}{2b^2c}$$

Q.23 (1)

$$\text{Bulk modulus, } B = \frac{P_0}{\Delta V / V_0} \text{ but}$$

$$\Delta V = \gamma V_0 \Delta t = 3\alpha V_0 \Delta t \text{ so } \Delta t = \frac{P_0}{3B\alpha}$$

Q.24 (4)

$$\gamma = \frac{\text{Stress}}{\text{Strain}} \Rightarrow \text{Stress} = \gamma \times \text{Strain}$$

$= 2 \times 10^{11} \times 10^{-3} = 2 \times 10^{8}\ \text{N/m}^2$

$$\text{Now} \Rightarrow \text{Stress} = \frac{\text{Weight}}{\text{Area}}$$

$\Rightarrow$ Weight = Stress × Area

$\text{Weight} = 2 \times 10^{8} \times \pi\,(0.5 \times 10^{-3})^2$

$= 157\ \text{N}$

Q.25 (2)

When temperature rises, T increases and hence clock runs slow or loses time.

Q.26 (1)

$$\rho = \frac{M}{V} \Rightarrow \rho \propto V^{-1}$$

$$\frac{\Delta\rho}{\rho} = -1\frac{\Delta V}{V}$$

$$\frac{\Delta\rho}{\rho} = -\gamma\Delta T = -49 \times 10^{-5} \times 30$$

$$\frac{\Delta\rho}{\rho} = -1.47 \times 10^{-2}$$

Q.27 (1)

Slope of P – y graph = + ρg

$$\frac{3}{4} = \rho \times 10$$

$$\therefore\ \rho = \frac{3}{4 \times 10}\frac{0.30}{4}0.075\,\text{kg/m}^3$$

Q.28 (1)

(I) In case of mercury, Cohesive force is much greater than that of water.

(II) Excess pressure -

$$\Delta P = \frac{4T}{r}$$

Q.29 (2)

The velocity of all fluid particles crossing a given position is constant.

Q.30 (1)

$$\text{Rate of flow } \frac{dV}{dt} = Av$$

$$\Rightarrow \frac{3000 \times 10^{-3}}{60} = \sqrt{2gh} \times A$$

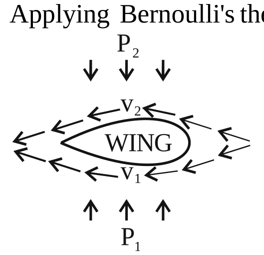
$$A = \frac{1}{20} \times \frac{1}{\sqrt{2 \times 10 \times 10}} = 35\text{cm}^2$$

Q.31 (2)

Volum of liquid displaced by stone is more when they are floating as comparison to that of when they put in liquid.

Q.32 (2)

Applying Bernoulli's theorem



$$P_1 + \frac{1}{2}\rho v_1^2 = P_2 + \frac{1}{2}\rho v_2^2$$

$$P_1 - P_2 = \frac{1}{2}\rho\,(v_2^2 - v_1^2)$$

$$\Rightarrow v_2^2 = \frac{2(P_1 - P_2)}{\rho} + v_1^2$$

$$v_2 = \sqrt{\frac{2 \times 1000}{1.3} + (50)^2} = 63.54 \simeq 64$$

Q.33 (4)

AV = constant

If A↓ then speed ↑ and pressure ↓

Q.34 (3)

$$\because \text{ Excess pressure} \propto \frac{1}{\text{radius}}$$

∴ Pressure inside smaller bubble is greater than larger bubble.

Q.35 (3)

$$V_T = \frac{2r^2}{9\eta}(\rho - \sigma)g$$

SECTION-B

Q.36 (4)

$\theta = ms(T_2 - T_1)$

$-80 = 4 \times \frac{1}{2}(T_2 - (-10))$

$-80 = 2(T_2 + 10)$

$-40 - 10 = T_2$

$T_2 = -50°C$

Q.37 (3)

The relation between two temperature scale is given as :

$$\frac{A-42}{110} = \frac{B-72}{220}$$

For the two temperature scale to show same reading, A = B

$$\Rightarrow \frac{A-42}{110} = \frac{A-72}{220}$$

$\Rightarrow 2(A-42) = A-72$

$\Rightarrow 2A-84 = A-72$

$\Rightarrow A = +12^o$

Q.38 (3)

Here, water absorbs heat from paper cup preventing it to reach at it's ignition point.

Q.39 (4)

According to Wein's law, $\lambda_{max}T$ = constant, where T is the temperature in Kelvin.

$$\therefore \frac{(\lambda_{max})_1}{(\lambda_{max})_2} = \frac{T_2}{T_1} = \frac{2227+273}{1227+273}$$

$$\frac{(\lambda_{max})_1}{(\lambda_{max})_2} = \frac{2500}{1500} = \frac{5}{3}$$

or $(\lambda_{max})_2 = \frac{3}{5} \times (\lambda_{max})_1 = \frac{3}{5} \times 5000 = 3000$ Å.

Q.40 (3)

$M_{He} = 2M_{H_2}$

$T_{He} = 2T_{H_2} \Rightarrow \frac{T}{M}$ = Same

$V_{rms} \propto \sqrt{\frac{T}{M}} \Rightarrow (V_{rms})_{He} = (V_{rms})_{H_2}$

Q.41 (2)

Maxwell's law of distribution

$v \propto \sqrt{T}$

$v\uparrow$ so $T\uparrow$

Q.42 (1)

For an adiabatic process,

PV^γ = constant

or

$$\frac{P_1}{P_2} = \left(\frac{V_2}{V_1}\right)^\gamma \quad \text{or} \quad P_2 = 2^\gamma P_1$$

Now, for a monoatomic gas, the value of γ is the highest Thus, for the same change in volume, the monoatomic gas will have the maximum pressure.

Q.43 (1)

For adiabatic expansion

$\Delta Q = \Delta U + W$

$0 = \Delta U + W$

$\Delta U = -W$

$\Delta U = -ve \qquad (\because W = +ve)$

For Isobaric expansion,

$V \propto T$

$\Rightarrow V\uparrow : T\uparrow$

$\Rightarrow$ increase in internal energy

For Isothermal expansion

T = constant

$\Rightarrow$ U = constant

For Isochoric Process

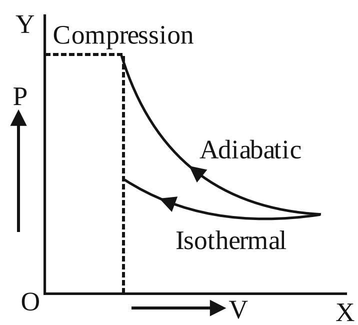
V = constant

$\Rightarrow \boxed{W = 0}$

Q.44 (2)

From the graph we can see that for compression of gas, area under the curve for adiabatic is more than isothermal process.

Therefore, compressing the gas through adiabatic process will require more work to be done.



Q.45 (3)

As seen from graph,

$\Delta\ell_A = \Delta\ell_B$

$$\Rightarrow \frac{F_A L_A}{\pi r_A^2 Y_A} = \frac{F_B L_B}{\pi r_B^2 Y_B}$$

$$\Rightarrow \frac{10\times L}{\pi r_A^2 \times Y} = \frac{40\times L}{\pi r_B^2\times Y}$$

$$\Rightarrow \frac{r_A}{r_B} = \frac{1}{2}$$

Q.46 (2)

$$B = \frac{\Delta P}{\left(-\frac{\Delta V}{V}\right)} \Rightarrow \frac{-\Delta V}{V} = \frac{P}{B}$$

$$V = \frac{4}{3}\pi r^3 \Rightarrow \frac{\Delta V}{V} = \frac{3\Delta r}{r} \quad ...(1)$$

$$A = 4\pi r^2 \Rightarrow \frac{\Delta A}{A} = \frac{2\Delta r}{r} \quad ...(2)$$

From eq (1) and (2) $\frac{\Delta A}{A} = \frac{2}{3}\frac{\Delta V}{V}$

$$\therefore \frac{\Delta A}{A} = \frac{2}{3}\frac{P}{B}$$

Q.47 (3)
% Change in volume is max. because $\gamma > \beta > \alpha$.

Q.48 (2)
$Q_4 + 10 + 5 - 8 = 0$
$Q_4 = 7\ m^3/s$
$\therefore 0.5\,v = 7$

$$v = \frac{7}{0.5}\frac{70}{5} = 14\,m/s$$

Q.49 **(2)**

$$h = \frac{2s\cos\theta}{r\rho g}$$

$$\therefore h \propto \frac{1}{r} \propto \frac{1}{\sqrt{A}}$$

Q.50 (2)

$$W = T\times 2\Delta A \qquad \Rightarrow \quad T = \frac{W}{2\Delta A}$$

$$= \frac{2\times 10^{-4}}{2[10\times 6 - 8\times 3.75]\times 10^{-4}}$$

$= 3.3\times 10^{-2}$ N/m

CHEMISTRY

SECTION-A

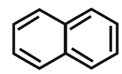
Q.51 (2)

$$\overset{4}{C}H_3 - \overset{3}{C}H = \overset{2}{C}H - \overset{1}{C}N$$
$$sp^3 \quad sp^2 \quad sp^2 \quad sp$$

Q.52 (1)

$COOH$
$|$
$COOH$
(oxalic acid) Ethane dioic acid.

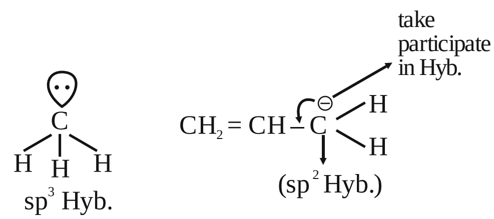
Q.53 (2)

 : Naphthalene

Q.54 (4)

$$CH\equiv C^{\ominus} > CH_3 - C\equiv C^{\ominus} > CH_2 = CH^{\ominus} > CH_3CH_2^{\ominus}$$

Q.55 (2)



Q.56 (4)
$-CH_3$ (+I group) other belongs to –I group.

Q.57 (2)
$(C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5 - NH_2$
(2) (3) (1)

Q.58 (4)
$-CH_3$ is + I group.

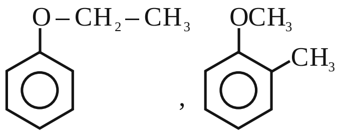
Q.59 (1)
$H_3O^{\oplus}$ is not an electrophile because it has complete octet.

Q.60 (3)
$-CH_3$ is +I group which decreases the acidic strength of phenol.

Q.61 (4)
Resonance energy $\propto$ extent of resonance.

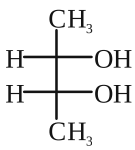
Q.62 (2)
Metamerism shows by that functional groups which is Bivalent or trivalent in nature.

Q.63 (4)



Both are metamers of each other.

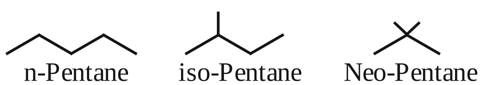
Q.64 (3)



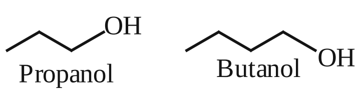
It contains plane of symmetry so it is achiral.

Q.65 (4)

C_5H_{12} has 3 chain isomers.



Q.66 (4)



Both are Homologus of each other.

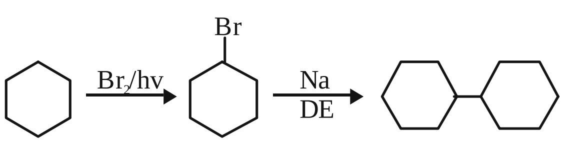
Q.67 (3)

B and D contains same groups on Both double bonded carbon with different configuration.

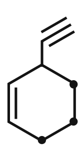
Q.68 (4)

Reaction is called Wurtz fittig reaction.

Q.69 (1)

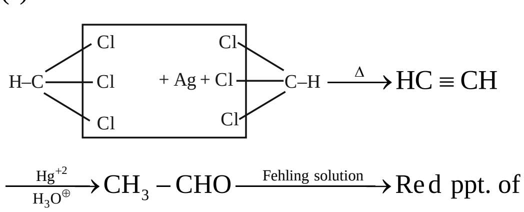


Q.70 (1)



3 carbons are sp^3 as well as 2° carbon.

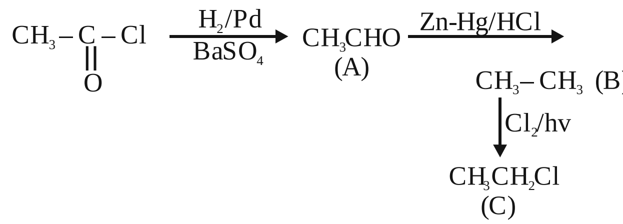
Q.71 (2)



Q.72 (4)

Alkyne with acidic hydrogen gave tollens test.

Q.73 (4)

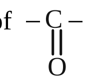


Q.74 (2)

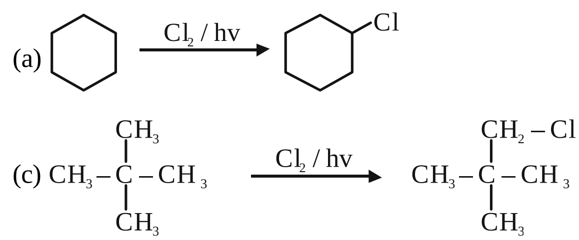
In case of electron withdrawing groups, electrophile NO_2^+ always attacks at meta position.

Q.75 (2)

Reactivity for NAR ∝ Electrophilic character on carbon of



Q.76 (2)



Q.77 (3)

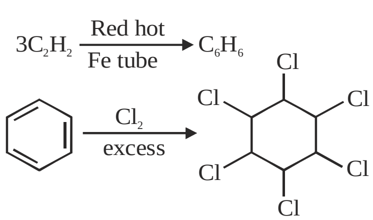
Wurtz reaction is best method to prepare symmetrical alkane.

Q.78 (3)

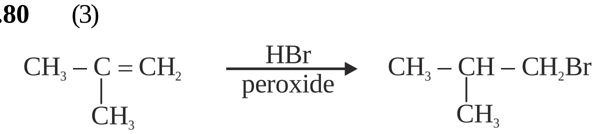
$C_2H_6\,(\text{Excess}) + Cl_2 \xrightarrow{\text{U.V.}} C_2H_5\text{-}Cl + HCl$

In this reaction, if we use Cl_2 in excess then dichloro and trichloro forms as product and if ethane is used in excess ethyl chloride forms as major product.

Q.79 (1)



Q.80 (3)



Q.81 (2)

$CH_3–C≡C–H \xrightarrow{NaNH_2} CH_3–C≡\overset{\ominus}{C}\ \overset{\oplus}{Na} \xrightarrow[S_N2]{CH_3–CH_2–1} CH_3–C≡C–CH_2–CH_3$

Q.82 (1)

$CH_3–CH_2CH_2CH_3 \xrightarrow[\Delta]{AlCl_3 + HCl} CH_3–\underset{\displaystyle CH_3}{\underset{|}{CH}}–CH_3$

Isomerization reaction

Q.83 (3)

$$\%\ \text{of Br} = \frac{80}{(108+80)} \times \frac{0.11}{0.18} \times 100 = 26\%$$

Q.84 (3)
Under reduced pressure, the liquid will distilled at a temperature below its boiling point and thus will not get decomposed.

Q.85 (4)
Lassaigne's test do not shown by diazonium salt as they decompose on heating

SECTION-B

Q.86 (1)

$\overset{5}{C}H_3–\overset{4}{C}H_2–\underset{\displaystyle O}{\underset{||}{\overset{3}{C}}}–\overset{2}{C}H_2–\underset{\displaystyle O}{\underset{||}{\overset{1}{C}}}–H$ 3-oxopentanal

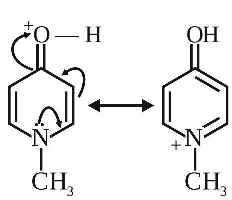
Q.87 (2)

$H–\overset{\displaystyle O}{\overset{||}{C}}–O–\overset{\displaystyle O}{\overset{||}{C}}–H$ Methanoic anhydride

Q.88 (1)
$CH_2=CH–CH_2–C≡N$

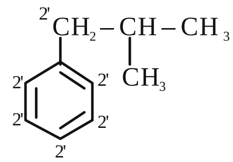
	σ - bond		π - bond
	9		3
Ratio	3	:	1

Q.89 (1)



Q.90 (4)
NCERT (XI) Pg # 342 3rd para

Q.91 (3)



7, 2'H are present in the compound.

Q.92 (3)

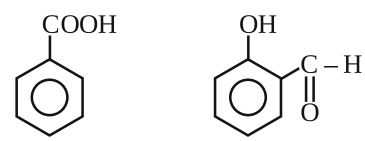
$\overset{\ominus}{C}H_3$ sp^3

$\overset{\bullet}{C}H_3$ sp^2

$\overset{\oplus}{C}H_3$ sp^2

Q.93 (4)
Anti conformer is most stable due to torsional strain.

Q.94 (2)

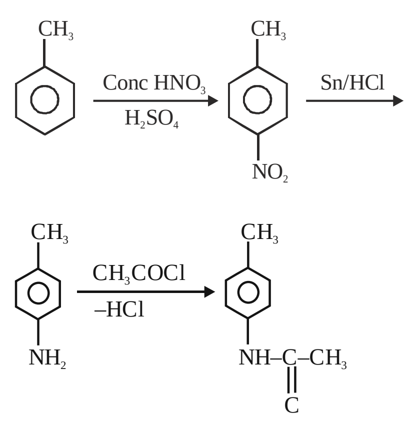


Both are functional isomer of each other.

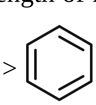
Q.95 (2)

$CH_3–CH=CH_2 \xrightarrow{H–Cl} \underset{\text{Intermediate}}{CH_3–\overset{\oplus}{C}H–CH_3} \xrightarrow{Cl^{\ominus}} CH_3–\underset{\displaystyle Cl}{\underset{|}{CH}}–CH_3$

Q.96 (3)



Q.97 (2)
Acidic strength of hydrogen

$CH≡CH >$  $> CH_2=CH_2 > CH_3–CH_3$

Q.98 (2)

(a) $R-COOH \xrightarrow{NaOH+CaO/\Delta} R-H$

(b) $-\underset{\underset{O}{||}}{C}- \xrightarrow{Zn-Hg/HCl} -CH_2-$

(c) $-\underset{\underset{O}{||}}{C}- \xrightarrow{NH_2-NH_2/OH^{\ominus}/\Delta} -CH_2-$

(d) $R-X \xrightarrow{Na/DE} R-R$

Q.99 (2)
$725-25=700$ mm
Temp. = 300 k, mass of the sub. 0.25 g
Vol. of moist nitrogen = 40 ml

Volume of N_2 at STP $V_2 = \frac{P_1V_1}{T_1} \times \frac{T_2}{P_2} = \frac{700 \times 40 \times 273}{300 \times 760}$

$= 33.52$ mL.

Wt. of $N_2 = \frac{28 \times 33.52}{22400} = \frac{938.56}{22400} = 0.0419$ g

% of N_2 in org. compound.

$= \frac{0.0419}{0.25} \times 100 = 16.76\%$

Q.100 (3)
Ammonium phosphopolybdate $[(NH_4)_3Po_4.12MoO_3]$ yellow ppt. is obtained.
In the detection of P.

BIOLOGY-I
SECTION-A

Q.101 (2)
By using water which contains stable isotope of oxygen, it was proved that oxygen comes from water during photosynthesis.

Q.102 (2)
Relationship between incident light and CO_2 fixation rate is linear at low intensity of light.

Q.103 (2)
4-carbon OAA is formed in mesophyll cell catalysed by an enzyme called PEPcase.

Q.104 (2)
Hint: CO_2 is the major limiting factor, influencing the rate of photosynthesis.
Sol. : C_3 plants show saturation at 450 ppm of CO_2, while C_4 plants show saturation at 360 ppm of CO_2 concentration at high light intensities. C_3 plants show CO_2 fertilization effect as in the CO_2 enriched atmosphere they show higher yield.

Q.105 (3)

Q.106 (2)

Q.107 (1)

Q.108 (3)

Q.109 (3)

Q.110 (3)

Q.111 (4)

Q.112 (2)

Q.113 (2)

Q.114 (4)
In the Krebs' cycle oxaloacetic acid and acetyl CoA form citric acid in presence of water in first step.

Q.115 (4)

Q.116 (4)

Q.117 (4)
Cytochrome bc1 complex is complex III.

Q.118 (1)

Q.119 (4)
Oxidative decarboxylation of pyruvate occurs in mitochondria.
Pyruvate enters into mitochondrial matrix where its oxidative decarboxylation occurs with the help of pyruvate dehydrogenase.

Q.120 (3)

Q.121 (3)

Q.122 (2)

Q.123 (4)
The statement I is correct. Statements II and III are incorred and can be corrected as
- Electron transport chain can occur only in the presence of oxygen.
- Complete oxidation of glucose into CO_2 and H_2O requires the presence of oxygen.

Q.124 (2)

Q.125 (4)

Q.126 (1)
IAA is a natural auxin. Apical hook formation occurs by ethlene.

Q.127 (2)

Q.128 (2)
IAA is a naturally occuring auxin.

Q.129 (3)
It activates the α–amylase production in germinating seeds.

Q.130 (2)
Plants have the capacity for indeterminate growth.
Growth in plants is continuous throughout their life due to the presence of different types of meristems at specific locations in their body

Q.131 (3)
Life span is not related with the growth in size or weight of the organisms.

Q.132 (3)

Q.133 (1)

Q.134 (4)

Q.135 (3)

SECTION-B

Q.136 (1)

Q.137 (2)

Q.138 (4)

Q.139 (3)

Q.140 (1)
Calvin cycle starts with the carboxylation of RuBP.
The sequence of the three stages of Calvin cycle is
Carboxylation $\longrightarrow$ Reduction $\longrightarrow$ Regeneration

Q.141 (4)

Q.142 (3)

Q.143 (2)
For respiration, breakdown of molecules takes place in both cytoplasm and mitochondria. Carbon skeleton produced during respiration is also used for various cellular biosynthesis.

Q.144 (3)

Q.145 (2)
R.Q. of carbohydrates – 1
R.Q. of fats and fatty acids – Less than 1
R.Q. of protein – 0.9

Q.146 (4)
Auxin delay the senescence in young leaves.

Q.147 (4)

Q.148 (2)

Q.149 (1)
The curve in the graph shows exponential growth of that plant organ.
A sigmoid curve is a characteristic of living organism growing in a natural environment. The geometric growth is expressed as
$W_1 = W_0 e^{rt}$

Q.150 (3)

BIOLOGY-II
SECTION-A

Q.151 (2)
Calvin cycle occurs in stroma region of chloroplast.

Q.152 (2)
Q.153 (3)
Q.154 (3)
Q.155 (1)
Q.156 (2)
Q.157 (1)
Q.158 (2)
Q.159 (1)
Q.160 (2)
Q.161 (4)

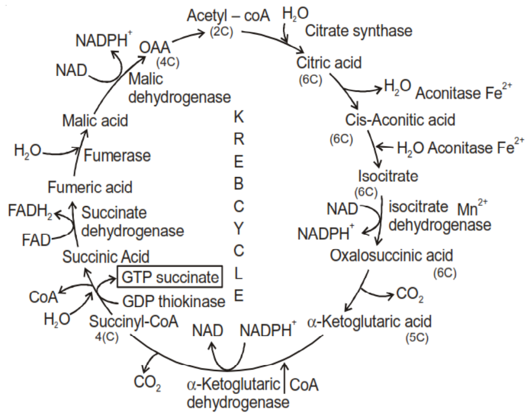
Q.162 (3)
Reaction centre has a single chl. a molecule.

Q.163 (4)
Complex IV or cytochrome oxidase transfer its electrons to O_2, (terminal electron) acceptor.

Q.164 (3)

Q.165 (2)
NADH + H+ produced in glycolysis, functions as a reducing ag

Q.166 (3)



Q.167 (4)

Q.168 (1)
$C_{51}H_{98}O_6$ is tripalmitin

Q.169 (3)
Statements I, II and FV are correct only statement III is incorrectand can be corrected as
Glycolysis Utilises 1 ATF molecule each at 2 steps, i.e. in the conversion of glucose to glucose-6-phosphate and in the conversion of fTructosc-6-phosphate to

Q.170 (3)

Q.171 (3)
Energy of ATP is also utilised during glycolysis.
During glycolysis NAD^+ is converted into $NADH^+$ H^+.

Q.172 (2)

Q.173 (1)

Q.174 (3)
Cyt c is a mobile electron carrier.

Q.175 (3)
Heterophylly is the phenomenon of appearance of different forms of leaves on the same plant.
Sol.: Difference in shapes of leaves is observed in buttercup present in air and water i.e., different shapes of leaves according to its habitat.

Q.176 (4)

Q.177 (4)
Dense cytoplasm is the feature of meristematic cells.

Q.178 (1)
Q.179 (2)
Q.180 (1)
Q.181 (2)
Ethylene increases number of fruits in plants like cucumber.

Q.182 (2)
Q.183 (4)
Q.184 **(2)**
GA cause bolting in rosette plants.

Q.185 (4)
Cytokinin is derived from purines.

SECTION-B

Q.186 (4)
Q.187 (2)
Q.188 (4)
Hint: In C_3 plants, CO_2 acceptor is a 5-carbon containing molecule.
Sol. : In C_3 plants, RuBP is the primary CO_2 acceptor molecule.

Q.189 (2)
Q.190 (1)
Q.191 (2)
Peter Mitchell (1961) proposed the chemiosmotic mechanism of ATP synthesis which, states that ATP synthesis occurs due to H^+ flow through a membrane. It includes development of proton gradient and proton flow.

Q.192 (2)
Substrate level phosphorylation occur only at specific places in glycolysis and TCA cycle and produce 2ATP in both cases and hence total 4 ATP by substrate level phosphorylation.

Q.193 (1)
Q.194 (2)
Q.195 (4)
Q.196 (4)
Q.197 (2)
Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion..
Gibberellin is a plant hormone which is useful in early seed production in conifers because gibberellin increases α-amylase production in seed which helps in breakdown of seed dormancy and causes seed germination,
Ethephon is commercial name of ethylene hormone which is used to promote early ripening of fruits like tomato and apple.

Q.198 (2)
Q.199 (1)
Q.200 (4)