ANSWER KEY

AITS FINAL TRACK
PART TEST-08

PHYSICS

SECTION-A

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

SECTION-B

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

CHEMISTRY

SECTION-A

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

SECTION-B

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

BIOLOGY-I

SECTION-A

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

SECTION-B

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

BIOLOGY-II

SECTION-A

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

SECTION-B

Q.186 (3)	**Q.187** (2)	**Q.188** (2)	**Q.189** (4)	**Q.190** (2)	**Q.191** (2)	**Q.192** (4)	**Q.193** (3)	**Q.194** (2)	**Q.195** (4)
Q.196 (2)	**Q.197** (4)	**Q.198** (2)	**Q.199** (2)	**Q.200** (1)					

PHYSICS
SECTION-A

Q.1 (3)

$U = U_f - U_i$

$W = MB - (-MB)$

$= 2MB$

$= 2 \times 4 \times 0.2 = 1.6J$

Q.2 **(1)**

On applying magnetic field, domains of ferromagnetic substance align themselves in the direction of magnetic field.

Q.3 (2)

When magnets are placed perpendicular to each other then,

Resultant magnetic moment

$$M' = \sqrt{M_1^2 + M_2^2}$$

Here, $M_1 = M_2 = M$

So, $M' = M\sqrt{2}$

$= (\sqrt{2})m\ell$

Q.4 (2)

Formula based

Q.5 (4)

Pole strength does not depend on length.
So, strength of the two pieces will remain same.

Q.6 (2)

$M = NIA$

$= 1000 \times 2 \times 8 \times 10^{-3} = 16\,Am^2$

$\tau = M \times B \sin\theta$

$$= 5 \times 10^{-2} \times 16 \times \frac{1}{2} = 0.4\,Nm$$

Q.7 (2)

S.I. unit of magnetic flux is Weber. S.I. unit of magnetic field is Tesla. Emf induced $\propto$ rate of change of flux

Q.8 (2)

$$\text{Rate of work} = \frac{W}{t} = P = Fv; \text{ also}$$

$$F = Bil = B\left(\frac{Bvl}{R}\right)1$$

$$\Rightarrow P = \frac{B^2v^2l^2}{R} = \frac{(0.5)^2 \times (2)^2 \times (1)^2}{6} = \frac{1}{6}W$$

Q.9 (1)

$$i = \frac{e}{R} = \frac{A}{R}.\frac{dB}{dt} = \frac{\left(1\times10^{-2}\right)^2}{16} \times 20 \times 10^{-3}$$

$= 1.25 \times 10^{-7}$ A (Anti - clockwise)

Q.10 **(1)**

Let i is increasing

$$\therefore V_A - 1 \times 2 + 6 - 10 \times 10^{-3}\frac{dl}{dt} = V_B$$

Since $V_A = V_B$

$$\frac{di}{dt} = 400\ A/s$$

Q.11 (2)

Equivalent resistance of the given wheatstone bridge circuit (balanced) is 3Ω so total resistance in circuit is R = 3 +1 = 4Ω. The emf induces in the loop.
So induced current

$$i = \frac{e}{R} = \frac{Bvl}{R} \Rightarrow 10^{-3}$$

$$= \frac{2 \times v \times (10 \times 10^{-2})}{4}$$

$\Rightarrow v = 2$cm/sec.

Q.12 (4)

$\phi = BA$

$MI = BA$ here $(x >> R)$

$$M = \frac{BA}{I} = \frac{\mu_0 IR^2 \times \pi r^2}{2x^3 \times 1}$$

Q.13 (1)

$$\frac{1}{2}CV^2 = \frac{1}{2}Li^2$$

$$\frac{1}{2} \times 4 \times 10^{-6} \times C^2 = \frac{1}{2} \times 2 \times (2)^2$$

$\Rightarrow C^2 = 2 \times 10^6 \Rightarrow C = \sqrt{2} \times 10^3$V

Order is 10^3 V

Q.14 (2)

We can reduce eddy current in the core of transformer by taking laminates core.

Q.15 (2)

$$di = \frac{d\phi}{dt \times R}$$

$$\phi = R\int idt$$

$$\phi = 5 \times 6 \times 0.2 \times \frac{1}{2} = 3$$

Q.16 (2)

$P_{av} = V_{rms}\, I_{rms} \cos\theta$

$= I_{rms}^2 Z \cos\theta \qquad \left[\because \cos\theta = \frac{R}{Z}\right]$

$P_{av} = \frac{I_0^2}{2} R$

Q.17 (3)

$$i_{rms} = \sqrt{\frac{\int_2^4 4t\,dt}{\int_2^4 dt}} = \sqrt{\frac{4\left(\frac{t^2}{2}\right)_2^4}{(t)_2^4}} = \sqrt{\frac{2\left[4^2 - 2^2\right]}{(4-2)}} = 2\sqrt{3}A$$

Q.18 (2)

for step up transformer

$N_s > N_p$

for step down transformer

$N_s < N_p$

for resonance, $X_L = X_C$

Quality factor $Q = \frac{\omega_0 L}{R}$

Q.19 (4)

Induced emf in primary coil

$$E_p = \frac{d\phi}{dt} = \frac{d}{dt}(40 + 8t) = 8\text{volt}$$

Induced emf in secondary coil

$$\frac{E_s}{E_p} = \frac{N_s}{N_p} \Rightarrow \frac{E_s}{8} = \frac{1500}{150} \Rightarrow E_s = 80\text{volt}$$

Q.20 (3)

$\tau = RC, \ \therefore \omega = \frac{1}{RC};$

$$Z = \sqrt{R^2 + \left(\frac{1}{\omega C}\right)^2} = \sqrt{R^2 + R^2} = \sqrt{2R}$$

Q.21 (2)

$$f = \frac{1}{2\pi\sqrt{LC}}$$

voltage on capacitor is more than that os supply voltage because the phase difference between V_L an V_C is 180º (i.e. out of phae)

Q.22 (1)

At frequency *A* capacitive reactance will be greater than inductive reactance.

Q.23 (4)

In a RL series, circuit *V* leads *I*.

Q.24 (3)

$I_{rms} = \frac{V_{rms}}{Z}$

$Z = \sqrt{R_{eq}^2 + X_C^2} = 5\sqrt{2}\ \Omega$

$I_{rms} = \frac{20}{5\sqrt{2}}$

$I_{rms} = 2\sqrt{2}$ A

Q.25 (2)

Hint: $P_{av} = I_{rms}^2 R = \frac{V_{rms}^2 . R}{Z^2}$

$\cos\phi = \frac{3}{\sqrt{13}} = \frac{R}{Z}$

$Z = \frac{\sqrt{13}}{3} R$

$P_{av} = \frac{V_{rms}^2}{Z^2} R = \frac{9V^2}{13R}$

$R = \frac{9 \times (220)^2}{968 \times 13} = 34.6\,\Omega$

Q.26 (3)

Using Lenz law

Q.27 (3)

Factual.

Q.28 (3)

$f = \frac{\omega}{2\pi} = \frac{20\pi \times 10^6}{2\pi} = 10 \times 10^6 = 10^7 \text{Hz}$

$\lambda = \frac{2\pi}{K} = \frac{2\pi}{\pi / 2 \times 10^{-2}} = 400\text{m}$

Q.29 (3)

$c = \frac{E}{B} \qquad H = \frac{B}{\mu_0}$

$\frac{1}{\sqrt{\mu_0 \in_0}} = \frac{E}{H\mu_0}$

$\sqrt{\frac{\mu_0}{\in_0}} = \frac{E}{H}$

Q.30 **(1)**

Microwaves have large wavelengths and low frequencies. Due to which they travel along a straight line without bending.

Q.31 (3)

Every body at all time, at all temperatures emits rediation except at T=0

The radiation emitted by the human body lies in the Infra-red region.

Q.32 **(4)**

$U_E = U_B$

Q.33 (2)

Theory based

Q.34 (4)

$$v = \frac{c}{\sqrt{\mu_r \varepsilon_r}} = \frac{3\times10^8}{3} = 10^8 \text{ m/s}$$

SECTION-B

Q.35 (4)

Electric & magnetic field vectors are perpendicular to each other so option (4) is false.

Q.36 **(2)**

From $T = 2\pi\sqrt{\frac{I}{MB}}, 4 = 2\pi\sqrt{\frac{I}{MB}}$

When it is cut into two equal parts in length, mass of each part becomes $\frac{1}{2}$, I = mass $\frac{(\text{length})^2}{12}$ becomes $\frac{1}{8}$th and M becomes $\frac{1}{2}$

$$T' = 2\pi\sqrt{\frac{\frac{I}{8}}{\left(\frac{M}{2}\right)B}}$$

$$\therefore T' = \frac{1}{2}\left(2\pi\sqrt{\frac{I}{MB}}\right)$$

$$T' = \frac{1}{2}T = 2s$$

Q.37 (2)

Volume of rod = $10 \times 0.5 \times 0.2 \times 10^{-6} = 10^{-6} m^3$

$H = 0.5 \times 10^4 Am^{-1}$, $M = 5 Am^2$ B = ?

Intensity of magnetisation i.e.

$$I = \frac{M}{V} = \frac{5}{10^{-6}} = 5\times10^6 Am$$

From $B = \mu_0(I + H)$

Magnetic induction

i.e. $B = 4\pi \times 10^{-7}[5 \times 10^6 + 0.5 \times 10^4]$

$= 4\pi \times 10^{-7} \times 5 \times 10^6 = 20 \times 3.14 \times 10^{-1}$

$= 6.28$ T

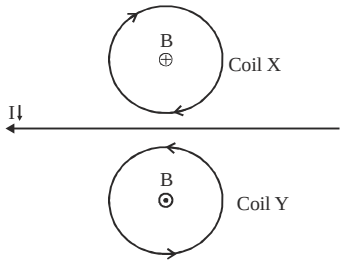
Q.38 **(4)**

factual

Q.39 (2)

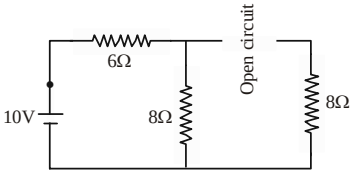
Induced emf $e = -L\frac{di}{dt}$

Q.40 (1)



Q.41 (1)

At t = 0



$$I = \frac{V}{R_{net}} = \frac{10}{6+8} = \frac{10}{14} = \frac{5}{7} A$$

Q.42 (2)

$$|e| = \frac{\Delta\phi}{\Delta t} = \frac{NBA}{\Delta t} = \frac{100\times5\times10^{-4}\times1}{0.1} = 0.5 \text{ volt}$$

Q.43 (1)

Current in the circuit will be zero rate of charge of current will be maximum therefore emf induced will be not zero.

Q.44 (1)

$$\cos\phi = \frac{R}{Z} \Rightarrow \frac{1}{\sqrt{2}} = \frac{15}{\sqrt{R^2 + (X_L - X_C)^2}}$$

$X_L = 100 \times 0.1 = 10\Omega$

$(15)^2 + (10 - X_C)^2 = 450$

$10 - X_C = \pm\ 15$

$X_C = 25$

$$\frac{1}{\omega C} = 25 \Rightarrow C = \frac{1}{100 \times 25} = 400\mu F$$

Q.45 (4)

$\because$ 2π (phase difference) $\equiv$ T(Time difference)

$$\text{I rad (PD)} \equiv \frac{T}{2\pi} \text{ (Time difference)}$$

$$\text{So, } \frac{\pi}{4}\text{(PD)} \equiv \frac{T}{2\pi} \times \frac{\pi}{4} \text{ (Time difference)}$$

$$= \frac{T}{8} \Rightarrow \text{time difference} = \frac{1}{50 \times 8}\text{s}$$

or time difference = 2.5 ms.

Q.46 (4)

$\because$ $Z^2 = A^2 + B^2$

$\because$ $[Z] = [A] + [B]$

$\because$ $[AB] = [Z]^2 = [\text{ohm}]^2$

Now,

$$\text{ohm} \equiv \frac{V}{i} \equiv \frac{\text{work}}{\text{charge} \times \text{current}} \equiv \frac{ML^2T^{-2}}{(AT)A}$$

$= ML^2T^{-3}A^{-2}$

$\therefore$ $[AB] = [M^2L^4T^{-6}A^{-4}]$

Q.47 (3)

$$P_{\text{out put}} = \frac{90}{100} P_{\text{input}}$$

$$900 = \frac{9}{10} \times 3300 \times I_P$$

$$I_P = \left(\frac{100}{330}\right) = \frac{10}{33}\text{ A}$$

Q.48 (1)

$$A = 100\text{ V/m}, V = 10^8 \Rightarrow \omega = 2\pi n = \frac{2\pi C}{\lambda}$$

$$\lambda = \frac{2\pi \times 3 \times 10^8}{10^8} = 6\pi$$

$= 6\pi = 18.84\text{m}$

and $k = \frac{2\pi}{\lambda} = \frac{2\pi}{6\pi} = \frac{1}{3} = 0.33\text{ rad/m}$

Q.49 (2)

$$I = \frac{B_0^2 C}{2\mu_0}$$

$$= \frac{\left(0.2 \times 10^{-6}\right)^2 \times 3 \times 10^8}{2 \times 4\pi \times 10^{-7}}$$

$= 4.8\text{ W/m}^2$

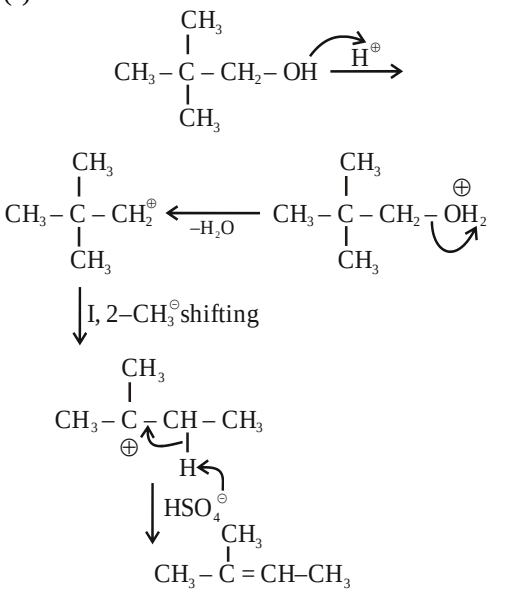
Q.50 (1)

Hint: $I = \frac{P}{4\pi r^2}$

$$I = \frac{1}{2 \times 4} \frac{314}{\times 3.14 \times (0.1)^2} = 1.25 \times 10^3\text{ W m}^{-2}$$

CHEMISTRY

Q.51 (2)

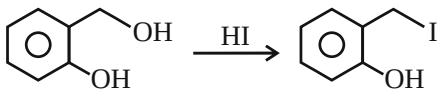


Q.52 (3)

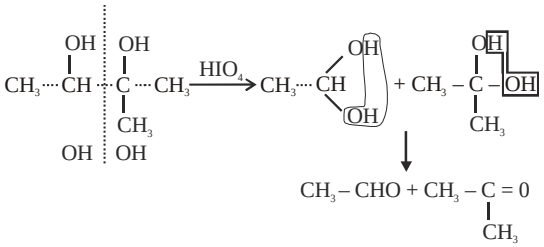
Reactivity order of Alcohol with lucas reagent.

Diphenyl carbinol > t-Butyl Alcohol > 2-Butanol > Isobutyl Alcohol

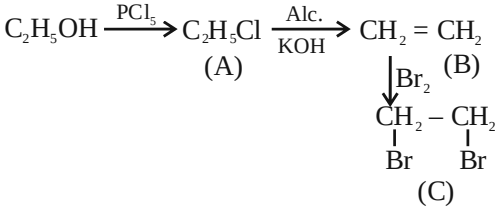
Q.53 (2)



Q.54 (2)



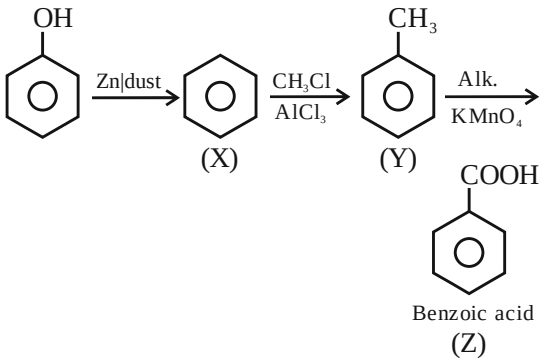
Q.55 (3)



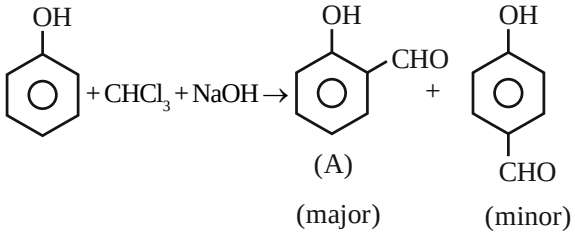
Q.56 (2)

3° alcohol dehydrates on heating with Cu at 573 K.

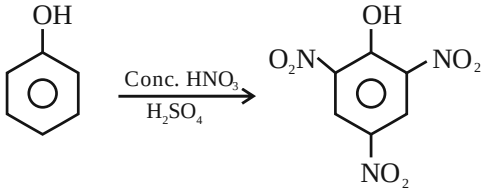
Q.57 (4)



Q.58 (1)

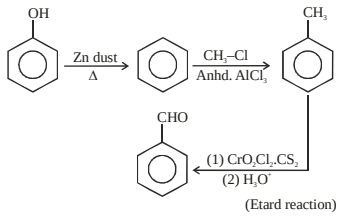


Q.59 (4)

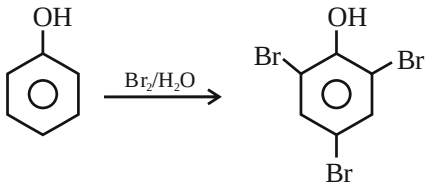


Picric acid

Q.60 (3)



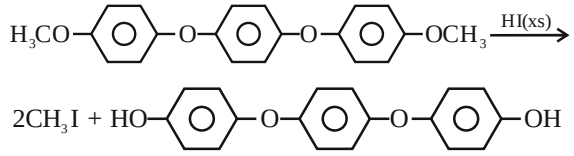
Q.61 (4)



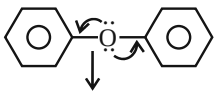
Q.62 (3)

Phenol gives violet colour with neutral $FeCl_3$.

Q.63 (2)

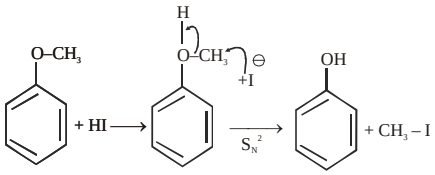


Q.64 (4)



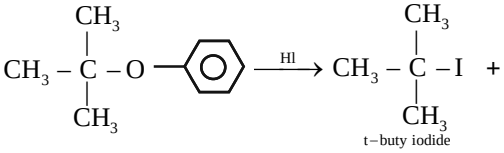
least Reactive due to double bond characterstics

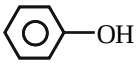
Q.65 (3)



Q.66 (4)

Hint : S_N1 reaction.

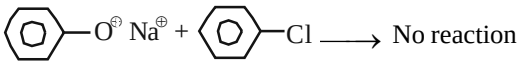




phenol

Q.67 (1)

Hint : C – Cl bond in aryl halide has double bond character.



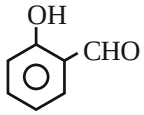
Q.68 (4)

Hint : Acidic strength HI > HBr > HCl.

Q.69 (2)

$R-CH_2OH \xrightarrow{K_2Cr_2O_7} RCHO$

$R-CHO \xrightarrow{K_2Cr_2O_7/H^{\oplus}} RCOOH$

$C_6H_5OH + CHCl_3 \xrightarrow{KOH}$  $+ KCl + H_2O$

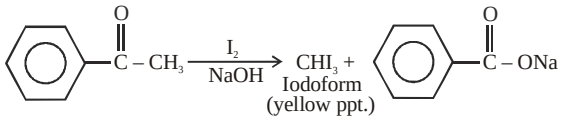
$C_6H_5CHO + HCHO \xrightarrow{NaOH/\Delta} C_6H_5CH_2OH + HCOONa$

Q.70 (3)

$CH_3-CH_2-CN \xrightarrow[(2)H_3O^{\oplus}]{(1)SnCl_2+HCl} CH_3-CH_2-CHO$

(Stephen's Reduction)

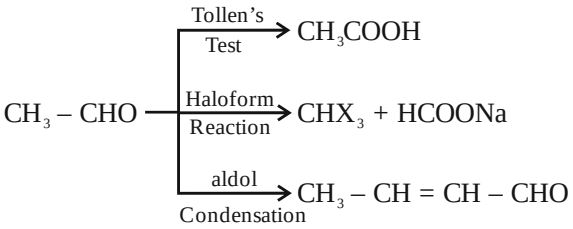
Q.71 (3)



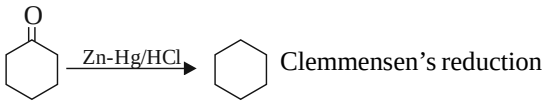
Q.72 (2)

Aldehyde is always more reactive than ketones towards NAR.

Q.73 (4)

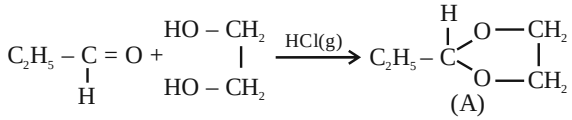


Q.74 (4)



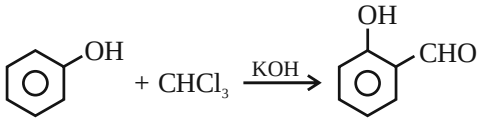
Clemmensen's reduction

Q.75 (2)



Q.76 (4)

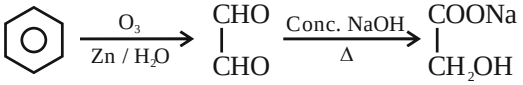
Reimer Tiemann Reaction



Carbyl amine Reaction

$R-NH_2 + CHCl_3 \xrightarrow{KOH} RNC$

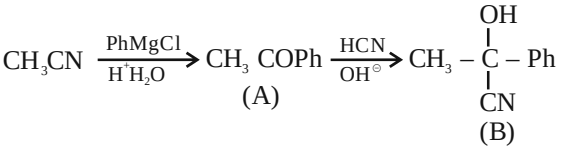
Q.77 (4)



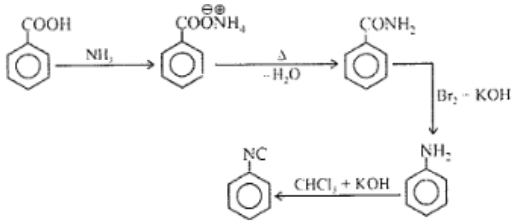
Q.78 (4)

Only Primary Alcohol will oxidise into Aldehyde.

Q.79 (2)



Q.80 (4)

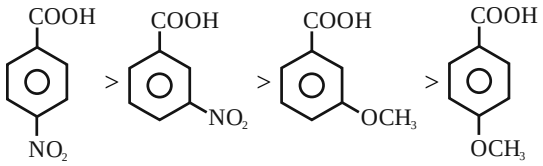


Q.81 (4)

$Ph-COOH + C_2H_5\overset{18}{O}H \xrightarrow[H_2SO_4]{Conc.} Ph-\underset{\underset{O}{\|}}{C}-\overset{18}{O}-C_2H_5$

Q.82 (2)

Reactivity order for sodalime decarboxylation



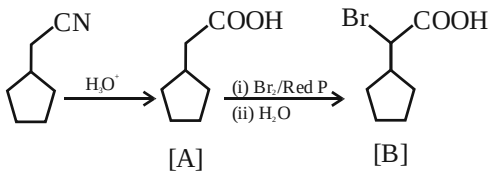
Q.83 (2)

$CH_3CH_2CH_2-\underset{\underset{O}{\|}}{C}-\overset{18}{O}-C_2H_5 \xrightarrow{H_2O/H^+} CH_3\ CH_2\ CH_2$

$COOH + C_2H_5\overset{18}{O}H$

Q.84 (2)

Hint : Carboxylic acid undergoes Hell-Volhard Zelinsky reaction in presence of Br_2/red-P.



Q.85 (1)

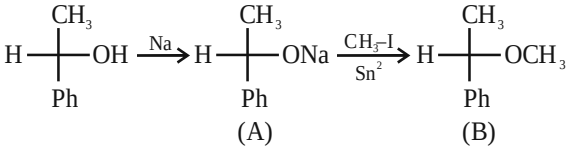
$\underset{\underset{F}{|}}{CH_2}-COOH > \underset{\underset{Br}{|}}{CH_2}-COOH$

$-I \rightarrow -F > -Br$

order

SECTION-B

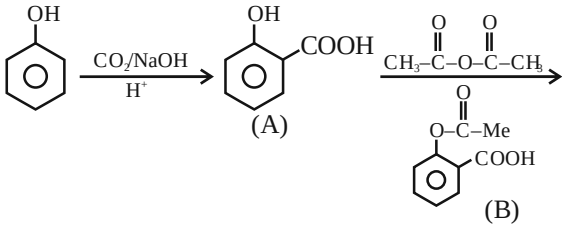
Q.86 (2)



Q.87 (2)

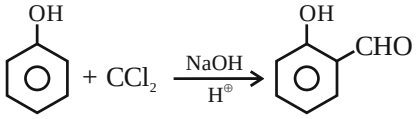
3° Alcohol will be most Reactive towards Lucas Reagent.

Q.88 (2)



Q.89 (3)

$CHCl_3 + NaOH \longrightarrow :CCl_2$



Q.90 (1)

Williamson's synthesis

$C_2H_5ONa + ClC_2H_5 \rightarrow \underset{\text{diethyl ether}}{C_2H_5OC_2H_5} + NaCl$

Q.91 (2)

$Me_3C–O–CH_2CH_3 + HI \xrightarrow{\Delta} Me_3C–I + CH_3CH_2OH$

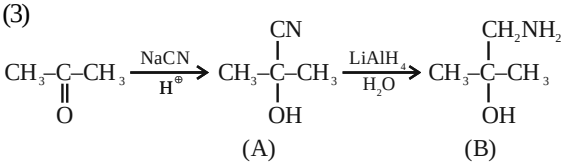
Q.92 (2)

Carbonyl compounds which is having $CH_3-\underset{\underset{O}{\|}}{C}-$ group can give Haloform Test.

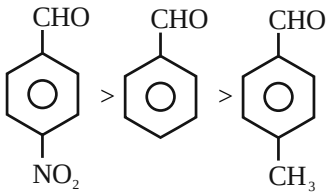
Q.93 (1)

Reaction is aldol condensation.

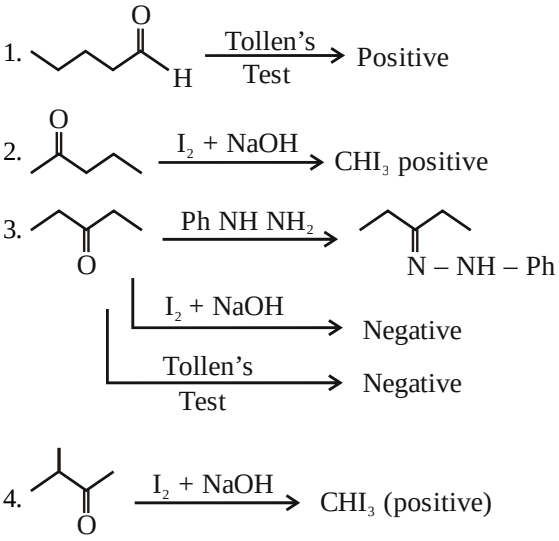
Q.94 (3)



Q.95 (1)



Q.96 (3)



Q.97 (3)

This compound which contain methyl ketonic linkage or which can change to methyl ketonic linkage can give a positive iodoform test. So, all secondary alcohol can't be given positive iodoform test therefore option (3) is correct

Q.98 (1)

$Ph-CHO + NH_2OH \longrightarrow Ph-CH=N-OH$

(show 2-Geomatrical isomer syn and Anti)

Q.99 (3)

Presence of β-keto w.r.t. carboxylic acid increases rate of decarboxylation.

Q.100 (3)

$HCOOH \xrightarrow[\text{conc.}H_2SO_4]{\Delta} CO + H_2O$

BIOLOGY-I

SECTION-A

Q.101 (2)

In the likelihood of getting infected from tetanus, quick immune response is provided by administering tetanus antitoxin (preformed antibodies to the tetanus).

Q.102 (2)

Amoebiasis is amoebic dysentery characterised by the given symptoms.

Q.103 (2)

Q.104 (3)

Macrophages continue to produce virus after being infected and like HIV factories.

Q.105 (1)

Haemozoin is a toxic substance resulting in high fever.

Q.106 (2)
Coca alkaloid or cocaine is obtained from Erythroxylum coca. Plants with hallucinogenic properties are Atropa belladona and Datura.

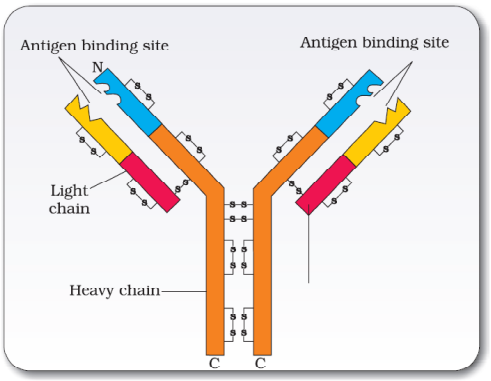
Q.107 (4)
Antibodies are secreted by B-lymphocytes.
Monocytes and neutrophils are phagocytic cells.

Q.108 (3)
Ascaris, an intestinal parasite causes ascariasis , symptoms of this disease include internal bleeding, muscular pain, fever, anemia and blockage of the intestinal passage.

Q.109 (1)
Interferon is a suitable example of cytokine barrier. These are the proteins secreted by virus-infected cells and protect non-infected cells from further viral infection.

Q.110 (4)
The most common warning signs of drug and alcohol abuse among youth include drop in academic performance, unexplained absence from school/college, lack of interest in personal hygiene etc.

Q.111 (4)
Antibody binding site is a part of antigens. Antibody contains antigen binding site.



Q.112 (1)

Q.113 (3)
Rhino viruses cause common cold. They infect the nose and respiratory passage but not the lungs.

Q.114 (3)
Cocaine interferes with the transport of the neuro-transmitter dopamine and its excess dosage causes hallucinations.

Q.115 (3)

Q.116 (2)

Q.117 (3)

Q.118 (2)

Q.119 (2)

Q.120 (2)

Q.121 (3)

Q.122 (2)

Q.123 (3)

Q.124 (3)

Q.125 (2)

Q.126 (2)

Q.127 (2)

Q.128 (3)
Entamoeba histolytica is a parasite of large intestine of man.

Q.129 (3)

Q.130 (3)

Q.131 (2)

Q.132 (3)

Q.133 (1)

Q.134 (2)

Q.135 (4)
Hint: Function of thymus
Sol.: MALT is an example of secondary lymphoid tissue and it is associated with acquired immunity. Maturation of T-lymphocytes occur in thymus.

SECTION-B

Q.136 (2)
MRl uses strong magnetic rays and non-ionising radiations to accurately detect pathological changes only in living tissues.

Q.137 (4)
If the regular use of drugs or alcohol is abruptly discontinued, the symptoms due to withdrawal of drugs include anxiety, shakiness, nausea and vomiting.

Q.138 (1)
Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
Virus infected cells secrete proteins called interferons, which protect non-infected cells from further viral infection.

Q.139 (1)

Q.140 (2)
The filarial worms cause a slowly developing chronic inflammation of the organs in which they live for many years. Amoebic dysentery is caused by Entamoeba histolytica.

Q.141 (3)

Q.142 (2)
Normal cells show a property called contact inhibition by virtue of which contact with other cells inhibits their uncontrolled growth.

Q.143 (2)
Maturation of B-lymphocyte occurs in bone marrow.

Q.144 (1)

Q.145 (3)

Q.146 (2)

Q.147 (4)

Q.148 (3)

Q.149 (2)
Morphine belongs to the class of opioids. Cannabinoids are a group of chemicals which interact with cannabinoid receptors present principally in the brain.

BIOLOGY-II
SECTION-A

Q.150 (1)
NCERT XII Pg # 153

Q.151 (1)
Baculoviruses are excellent candidate for species-specific, narrow spectrum insecticidal applications. They have been shown to have no negative impacts on plants, mammals, birds, fishes or even non-target insects.

Q.152 (2)
A-CO_2; B-Propionibacterium sharmanii.
Swiss cheese is manufactured with a single strains of Propionibacterium sharmanii and Propionibacterium arabinosum. Its characteristic feature is formation of large holes due to production of large amount of CO_2

Q.153 (1)

Q.154 (3)
The full potential of penicillin as an effective antibiotic was established by Ernest chain and Howard Folrey.

Q.155 (2)
In biogas plant, a floating cover is placed over the slurry, which keeps on rising as the gas is produced in the tank due to microbial activity.

Q.156 (1)
BOD is a measure of the organic matter present in water. Thus, greater the value of BOD in a sample of water, more will be its polluting potential. This indicates that the water body will be highly polluted.

Q.157 (2)

Q.158 (2)
Saccharomyces cerevisiae.
Bread is made through fermentation by Saccharomyces cerevisiae or commonly called baker's yeast. Yeast species also used in alcoholic fermentation is S. cerevisiae (Brewer's yeast)

Q.159 (2)
Production of beverages and antibiotics on an industrial scale requires growing microbes in very large vessels called fermentors.

Q.160 (3)

Q.161 (2)
Penicillin is obtained from Penicillium notatum fungus.

Q.162 (2)

Q.163 (1)

Q.164 (2)

Q.165 (4)

Q.166 (2)
Antibiotics are capable of curing certain diseases.

Q.167 (1)

Q.168 (4)
The first antibiotic was discovered accidently by Fleming while working on *Streptococcus bacterium Penicillium* strains developed.

Q.169 (1)

Q.170 (4)
NCERT (XII) Pg. # 184, Para-10.3

Q.171 (3)
Treatment of waste water is done by heterotrophic microbes naturally present in sewage.

Q.172 (2)
Fungs *Trichoderma*, Baculoviruses (NPV) and *Bacillus thuringiensis* are used as biocontrol agents.
Rhizobium, Nostoc, Azospirillum and *Oscillatoria* are used as biofertilisers, whereas TMV is a pathogen and aphids are pests that harm crop plants.

Q.173 (4)
The statement in option (d) is incorrect and can be corrected as
Rhizobium is a symbiotic bacterium that lives in the root nodules of legumes and fixes atmospheric nitrogen.
Rest of the statements are correct.

Q.174 (2)

Q.175 (3)

Q.176 (4)
Antibiotics have greatly improved our capacity to treat deadly diseases such as diphtheria (gal ghotu), whooping cough (kali khansi), plague, leprosy (kusht rog), which is used to kill millions of people all over the world.

Q.177 (3)
The residue left after methane production from cattle dung is used as fertilizer

Q.178 (4)
Hint: Bt toxin is produced by *Bacillus thuringiensis.*
Sol.: *B. thuringiensis* is of insecticidal application.

Q.179 (1)
In the sewage treatment, when Biochemical Oxygen Demand (BOD) of sewage has reduced, the effluent is passed into settling tank. Here, the bacterial floes settle and the sediment thus formed is called activated sludge.

Q.180 (3)

Q.181 (3)

Q.182 (2)

Q.183 (3)

Q.184 (1)

Q.185 (4)
Fungi form symbiotic association with the roots of higher plants called mycorrhiza, e.g., Glomus.
Mycorrhiza shows benefits such as resistance to root borne pathogens, tolerance to salinity and drought and an overall increase in plant growth and development

SECTION-B

Q.186 (3)
Mycorrhiza and Rhizobium both are shows symbiotic association.
In the Mycorrhizal association fungi surround the root hairs of plants. This increases the surface area of the root hairs and allows it to better absorb nutrients in the soil. It also provides the plant roots with protection. In exchange the fungi attached to the root hairs gets glucose from the plant
The other type of root symbiosis is Rhizobium symbiosis. This type of symbiosis occurs in legumes. Here, nodules containing the bacteria Rhizobium attach themselves to root hairs of the legume. The Rhizobium absorbs and converts unusable nitrogen in the soil, to biologically usable nitrogen, which is then used by the legume. The root of the legume supplies the Rhizobium with glucose obtained photosynthetic parts of the plant

Q.187 (2)
Lactobacillus mediated change of milk to curd occurs due to coagulation and partial digestion of milk proteins.

Q.188 (2)
Citric acid is produced by Aspergillus niger (a fungus) and lactic acid, acetic acid, butyric acid are produced by bacteria.

Q.189 (4)

Q.190 (2)
Cyclosporin A is produced by Trichoderma polysporum.

Q.191 (2)

Q.192 (4)

Q.193 (3)

Q.194 (2)

Q.195 (4)

Q.196 (2)
Whisky, brandy and rum are proudced by distillation of fermented broth (high alcohol concentration).

Q.197 (4)
Lipase is used in detergent formulation and are helpful in removing oily stains from laundry.

Q.198 (2)

Q.199 (2)

Q.200 (1)
Non-symbiotic nitrogen fixation is carried out by Azotobacter, Clostridium, Azopirillum fungi and cyanobacteria (Nostoc, Anabaen(1).