ANSWER KEY
NEET (FINAL TRACK)
PART TEST-08 (XII)

PHYSICS

Q.1 (2)	Q.2 (4)	Q.3 (4)	Q.4 (1)	Q.5 (1)	Q.6 (1)	Q.7 (4)	Q.8 (1)	Q.9 (2)	Q.10 (2)
Q.11 (3)	Q.12 (3)	Q.13 (1)	Q.14 (1)	Q.15 (3)	Q.16 (2)	Q.17 (2)	Q.18 (4)	Q.19 (2)	Q.20 (1)
Q.21 (1)	Q.22 (1)	Q.23 (4)	Q.24 (4)	Q.25 (4)	Q.26 (2)	Q27 (1)	Q.28 (1)	Q.29 (4)	Q.30 (2)
Q.31 (2)	Q.32 (2)	Q.33 (1)	Q.34 (1)	Q.35 (2)	Q.36 (1)	Q.37 (2)	Q.38 (4)	Q.39 (3)	Q.40 (1)
Q.41 (4)	Q.42 (1)	Q.43 (4)	Q.44 (4)	Q.45 (4)	Q.46 (3)	Q.47 (1)	Q.48 (3)	Q.49 (3)	Q.50 (2)

CHEMISTRY

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

BIOLOGY-I

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

BIOLOGY-II

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

SOLUTIONS

PHYSICS
SECTION-A

Q.1 (2)

Motional emf, $e = \dfrac{Br^2\omega}{2}$

$\Rightarrow emf = \dfrac{(0.2)\times(0.1)^2}{2}\times\left(\dfrac{10}{\pi}\times 2\pi\right)$

$= \dfrac{2\times10^{-3}\times 20}{2}$

$= 2\times10^{-2}\,volt$

Q.2 (4)

Applying voltage across PQ,

$V_P - iR - \dfrac{Ldi}{dt} - \varepsilon = V_Q$

$\Rightarrow V_P - 7\times5 - 2\times5 - 10 = V_Q$

$\Rightarrow V_P - 45 - 10 = V_Q$

$\Rightarrow V_P - V_Q = 55\,volt$

Q.3 (4)

Induced emf, $e = \dfrac{-d\phi}{dt} = \dfrac{-d\left(\vec{B}.\vec{A}\right)}{dt}$

$\Rightarrow emf = \dfrac{-d\left(BA\cos\omega t\right)}{dt}$

$\Rightarrow$ emf depends on magnetic field (B), area of coil (A), angle between $\vec{B}$ and $\vec{A}$.

Q.4 (1)

Induced emf, $e = -\dfrac{d\phi}{dt}$

$\Rightarrow iR = -\dfrac{d\phi}{dt}$

$\Rightarrow d\phi = iRdt$ (magnitude wise)

$\Rightarrow \int d\phi = \Delta\phi = $ change in flux $= R\int idt$

$\Rightarrow \Delta\phi = R\times$(area under i-t graph)

$= 100\times\dfrac{1}{2}\times0.8\times10 = 400\,wb$

Q.5 (1)

From relation,

$\phi_{\text{secondary coil}} = M \, i_{\text{primary coil}}$
where M = mutual inductance

$\Rightarrow M = \dfrac{\phi_s}{i_P} = \dfrac{0.8}{2} = 0.4 \, H$

Q.6 (1)

Motional emf, $e = Bv\ell$
$\Rightarrow e = 6 \times 10^{-5} \times 10 \times 0.025$
$= 15 \times 10^{-6} \, V = 15 \, \mu V$

Q.7 (4)

$\dfrac{V_S}{V_P} = \dfrac{N_S}{N_P} = 10$

$V_s = 10 \times V_P = 10 \times 100$
$V_s = 1000 \, V$

$\dfrac{P_0}{P_{in}} = 0.8$

$P_0 = 0.8 \, P_{in}$
$V_{S/S} = 0.8 \, V_{P/P}$
$1000 \times l_s = 0.8 \times 2A \times 100$

$l_S = \dfrac{1.6 \times 100}{1000} = 0.16A$

Q.8 (1)

$\varepsilon = -L \dfrac{di}{dt}$

$40 = L \times \dfrac{(6A - 2A)}{0.1}$

$L = \dfrac{4}{4} \, H$

$L = 1 \, H$

Q.9 (2)

$\phi = NBA \cos \omega t$

$\Rightarrow \dfrac{d\phi}{dt} = \quad -N\omega \, BA \sin \omega t$

Induced emf $= \dfrac{-d\phi}{dt}$

$\Rightarrow e = N\omega \, BA \sin \omega t$
Maximum emf $= N\omega BA$

$= 100 \times \dfrac{1000 \times 2\pi}{60} \times 0.5 \times 40 \times 10^{-4}$

$= \dfrac{40\pi}{6} = \dfrac{20\pi}{3} \, volt$

Q.10 (2)

Induced emf $|\varepsilon| = L \dfrac{di}{dt}$

$= 4 \times 10^{-3} \times 10 \times 10^{-3}$
$= 40 \, mV$

Q.11 (3)

Energy stored in inductor per unit time
= power absorbed by inductor

$= Vi = \left(L \dfrac{di}{dt} \right) i$

$= 2 \times 4 \times 2 = 16w = 16 \dfrac{J}{s}$

Q.12 (3)

Quality factor, $Q = \dfrac{1}{R} \sqrt{\dfrac{L}{C}}$

(1) $Q = \dfrac{1}{4} \sqrt{\dfrac{64}{1}} = 2$

(2) $Q = \dfrac{1}{4} \sqrt{\dfrac{1}{1}} = \dfrac{1}{4}$

(3) $Q = \dfrac{1}{8} \sqrt{\dfrac{1}{64}} = \dfrac{1}{64}$

(4) $Q = \dfrac{1}{8} \sqrt{\dfrac{1}{1}} = \dfrac{1}{8}$

$\Rightarrow$ Quality factor is minimum for option 3.

Q.13 (1)
(A) Impedance has unit ohm
(B) Wattless current is a current and has unit ampere
(C) Quality factor is a unitless quantity
(D) RMS voltage is a voltage and has unit volt.

Q.14 (1)
Ammeter reads RMS current

$I_{rms} = \dfrac{V_{rms}}{\text{impedance}} = \dfrac{110}{\sqrt{R^2 + (X_L - X_C)^2}}$

$\Rightarrow i_{rms} = \dfrac{110}{\sqrt{55^2 + (15 - 15)^2}} = \dfrac{110}{55}$

$\Rightarrow i_{rms} = 2A$

Q.15 (3)
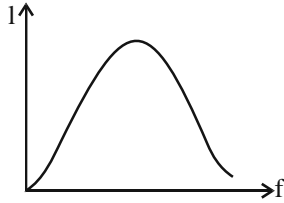Power transfer remains same in an ideal transformer.
In real transformer, $P_{output} < P_{input}$ due to energy losses.

In step-down transformer, $V_{output} < V_{input}$
from $i_{out} V_{out} = i_{in} V_{in}$
$\Rightarrow i_{output} > i_{input}$
Core of transformer are laminated to
reduce eddy current and power losses due to eddy
current.

Q.16 (2)

$$l_0 = \frac{V_0}{\sqrt{R^2 + \left(\omega L - \frac{1}{\omega C}\right)^2}}$$

Q.17 (2)

$$l_0 = \frac{200\sqrt{2}}{20\sqrt{2}} = 10A$$

$$i(t) = 10\sin\left(100\pi t - \frac{\pi}{4}\right)A$$

Voltage across inductor leads the current by $\frac{\pi}{2}$

$$V_i(t) = 10 \times 20 \sin\left(100\pi t - \frac{\pi}{4} + \frac{\pi}{2}\right) V$$

$$= 200 \sin\left(100\pi t + \frac{\pi}{4}\right) V$$

Q.18 (4)

$$V_L = -\frac{di}{dt}$$

The induced emf and current through inductor will be
sinusoidal. So its average value will be zero for one
cycle.

Q.19 (2)
$X_L = \omega L = 10 \times 5 = 50\,\Omega$

$$X_C = \frac{1}{\omega C} = \frac{1}{10 \times 2 \times 10^{-3}} = 50\Omega$$

$\because X_L = X_C \Rightarrow Z = R$

$$Z = \frac{V}{l} = R \Rightarrow \frac{220}{2} = 110\Omega$$

Q.20 (1)

$$\tan \phi = \frac{L\omega}{R} = \frac{3.5 \times 2\pi \times 50}{1100} = 1$$

$\phi = 45°$
Power fector

$$\cos \phi = \cos 45° = \frac{1}{\sqrt{2}}$$

Q.21 (1)
$V_{rms} = 200$ volt
$V_{peak} = \sqrt{2}\ V_{rms} = 200\sqrt{2}$ volt

$$I_{peak} = \frac{V_{peak}}{R} = \frac{200\sqrt{20}}{280}$$

$$\Rightarrow I_{peak} = \frac{5}{7}\sqrt{2}A = 1.01\,A$$

Q.22 (1)

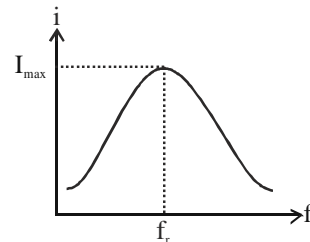Capacitive reactance, $X_C = \frac{1}{\omega C} = \frac{1}{2\pi fC}$

If frequency is doubled, X_C becomes half.

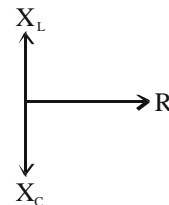$$\Rightarrow \text{New capacitive reactance} = \frac{3k\Omega}{2} = 1.5\,k\Omega$$

Q.23 (4)
Graph of current (i) vs frequency (f) is

f_r = resonant frequency
At resonance, $X_L = X_C$

Power factor, $\cos \phi = \frac{R}{Z}$

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

$$\Rightarrow \cos \phi = 1$$

Q.24 (4)

β-rays are electrons moving with very high speed. β-rays are emitted in nuclear reactions so, it is not an electromagnetic wave.

While radio waves, x-rays, gamma rays belongs to electromagnetic spectrum and are electromagnetic waves.

Q.25 (4)

Maxwell concluded electromagnetism into his four equations which explains principles of electromagnetism

four equations are

(1) $\oint \vec{E}.d\vec{A} = \dfrac{\phi_{Enclosed}}{\varepsilon_0}$

(2) $\oint \vec{B}.d\vec{A} = 0$

(3) $\oint \vec{E}.d\vec{l} = \dfrac{-d\phi_B}{dt}$

(4) $\oint \vec{B}.d\vec{l} = \mu_0 \varepsilon_0 \dfrac{d\phi_E}{dt} + \mu_0 i_{enclosed}$

Q.26 (2)

Order of increasing wavelength and decreasing frequency is X-rays, UV-rays, Visible rays, radio waves

$\Rightarrow$ Radiowaves have maximum wavelength and minimum frequency

Q27 (1)

Order of increasing frequency is
-Radiowave, yellow light, blue light, X-rays

Energy = hν where h = Planck's constant

ν = frequency

$\Rightarrow$ order of increasing frequency is the order of increasing energy.

$\Rightarrow$ Energy order is Radiowave < yellow light < Blue light < X-rays.

Q.28 (1)

Modified ampere circuital law or

ampere-Maxwell law is

$\oint \vec{B}.d\vec{l} = \mu_0 i_c + \mu_0 \varepsilon_0 \dfrac{d\phi_E}{dt}$

where i_c= conventional current or conductional current
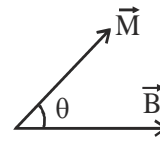
$\dfrac{\varepsilon_0 d\phi_\varepsilon}{dt}$ = displacement current.

Q.29 (4)

10% of 110 w = 11 w

Average intensity $= \dfrac{Power}{Area} = \dfrac{11}{4\pi r^2}$

$= \dfrac{11}{4\pi} = 0.8757 = 0.88 \ \dfrac{w}{m^2}$

Q.30 (2)

Torque, $\vec{\tau} = \vec{M} \times \vec{B}$

$\Rightarrow \tau = MB \sin\theta$

where M = magnetic dipole moment

B = Magnetic field

θ = angle between $\vec{M}$ and $\vec{B}$

Maximum value of torque = MB

$\Rightarrow \tau_{max} = (0.3) \times (2) = 0.6 \, Nm$

Q.31 (2)

Paramagnetic and ferromagnetic have positive magnetic susceptibility while diamagnetic has negative susceptibility.

Positive susceptibility means material favours external magnetic field while negative susceptibility means material opposes external magnetic field.

Q.32 (2)

From Lenz's law, there is a natural tendency to oppose change in flux. So, all materials opposes change in external magnetic field to some extent and are diamagnetic in nature. Superconductors are perfect diamagnetic substace.

Q.33 (1)

At unstable equilibrium, potential energy is maximum.
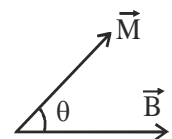
At stable equilibrium, potential energy is minimum.

Potential energy, $U = -\vec{M}.\vec{B}$

$U = -MB \cos\theta$

$U_{max} = -MB(-1)$

$= +MB$

$\Rightarrow U_{max} = (4) \times 10 = 40 \, J$

Q.34 (1)

Curie law for paramagnetic substance is

$X \propto \dfrac{1}{T} \Rightarrow X = \dfrac{C}{T}$

where X = magnetic susceptibility

T = absolute temperature

C = curie constant

$\Rightarrow XT = constant = C \Rightarrow X_1 T_1 = X_2 T_2$

Q.35 (2)

$$\chi = \frac{I}{H} \Rightarrow I = \chi H$$

where H is magnetising field intensity, I is intensity of magnetisation and χ is magnetic susceptibility.

Q.36 (1)

$$\vec{\tau} = \vec{\mu} \times \vec{B}$$

$$\vec{\mu} = i\vec{A} = ia^2\hat{k}$$

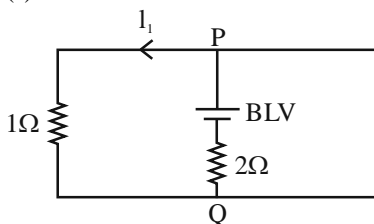$$\vec{\tau} = \left(ia^2\hat{k}\right) \times B_0\hat{i} = ia^2B_0\hat{j}$$

Q.37 (2)

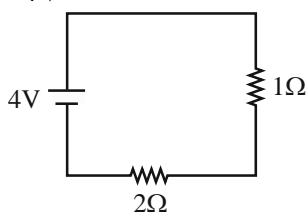Mutual inductance is independent of current in the coils.

Mutual inductance can be increased by reducing the distance between the coils or by increasing the number of turns in the coils.

Q.38 (4)

$$l_1 = 2 \times 1 \times 2$$
$$= 4\,V$$

Q.39 (3)

The eddy currents create a magnetic field that resists the motion while opposing the motion, eddy current causes damping. Due to this behaviour, eddy currents are used in induction brakes.

Q.40 (1)

$$i = \frac{d\phi/dt}{R} = \frac{100t}{400} = \frac{200}{400} = 0.5A$$

Q.41 (4)
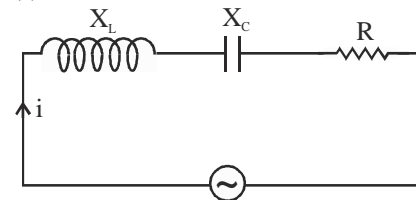
$$i_{avg} = \frac{\int_0^{10} i\,dt}{\int_0^{10} dt} = \frac{\text{Area under curve}}{10}$$

$$= \frac{\left(\frac{1}{2} \times 5 \times 20\right) - \left(\frac{1}{2} \times 5 \times 20\right)}{10}$$
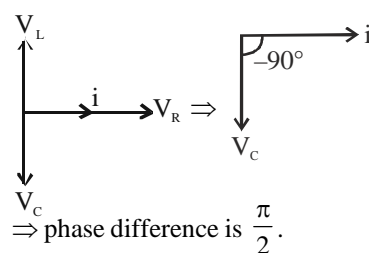
$$= \text{zero}$$

Q.42 (1)

Current is common through all three components R, L and C.

Phasor diagram,

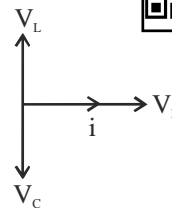$\Rightarrow$ phase difference is $\frac{\pi}{2}$.

Q.43 (4)

S.I. unit of angular frequency,

$$\omega = 2\pi f \text{ is } \frac{rad}{s}$$

Q.44 (4)

Phasor diagram for LCR circuit is

Phase difference between i and V_C is $\frac{\pi}{2}$

where i leads V_C

from graph, $V_C = -V_0 \sin \omega t$

$$\Rightarrow i = I_0 \sin\left(\omega t + \pi + \frac{\pi}{2}\right)$$

$$\Rightarrow i = -I_0 \cos \omega t$$

Q.45 (4)

$$\frac{E_0}{B_0} = C \text{ (speed of light in vacuum)}$$

$$E_0 = B_0 C = 3 \times 10^{-8} \times 3 \times 10^8 = 9\,N/C$$
So $E = 9\sin(1.6 \times 10^3 x + 48 \times 10^{10} t)$

Q.46 (3)

Fact and data.

Q.47 (1)

Speed of wave $= \dfrac{2 \times 10^{10}}{200} = 10^8 \, m/s$

Refractive index $= \dfrac{3 \times 10^8}{10^8} = 3$

Now refractive index $= \sqrt{\varepsilon_r \mu_r}$

$3 = \sqrt{\varepsilon_r (1)}$

$\Rightarrow \varepsilon_r = 9$

Option (1)

Q.48 (3)

For diamagnetic substance $x < 0$ and $\mu_r > 0$

Q.49 (3)

For a diamagnetic substance χ is small, negative and independent of temperature

Q.50 (2)
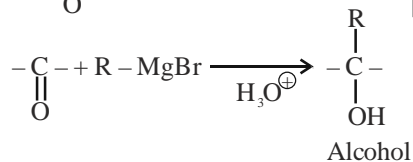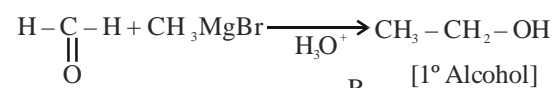
$\mu_r = \chi_m + 1 = 599 + 1 = 600$

$\mu = \mu_0 \mu_r = 4\pi \times 10^{-7} \times 600 = 2.4\pi \times 10^{-4} \, \dfrac{Tm}{A}$
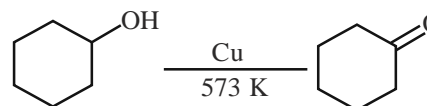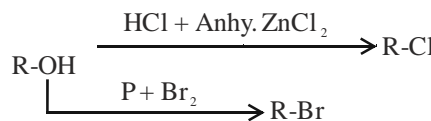
CHEMISTRY
SECTION-A

Q.51 (4)

$H - \underset{\underset{O}{\|}}{C} - H + CH_3MgBr \xrightarrow{H_3O^+} CH_3 - CH_2 - OH$

[1° Alcohol]

$-\underset{\underset{O}{\|}}{C} - + R - MgBr \xrightarrow{H_3O^{\oplus}} -\underset{\underset{OH}{|}}{\overset{\overset{R}{|}}{C}} -$

Alcohol

Q.52 (2)

Facts

Q.53 (3)

2' Alcohol (cyclohexanol) $\xrightarrow[573\,K]{Cu}$ ketone (cyclohexanone)

Q.54 (4)

$R\text{-}OH \xrightarrow{HCl + Anhy.\ ZnCl_2} R\text{-}Cl$

$R\text{-}OH \xrightarrow{P + Br_2} R\text{-}Br$

Q.55 (2)

3° Alcohol gives white turbidity with Lucas Reagent most readily.

Q.56 (2)

$\begin{array}{l} \text{Rate of Dehydration} \\ \text{of Alcohol} \end{array} \propto \begin{array}{l} \text{Stability} \\ \text{of product} \end{array}$

$b > d > c > a$

Q.57 (2)

Only secondary Alcohol which contains $CH_3 - \underset{\underset{OH}{|}}{CH} -$ group can give

Iodoform Test

Q.58 (2)

$C_2H_5MgCl +$ (phenol, $-OH$) $\longrightarrow C_2H_6$ ethane

Q.59 (2)

(cumene) $+ O_2 \xrightarrow{\Delta}$ $H_3C - \underset{}{C}(CH_3) - O - O - H$ (A) [Cumene Hydroperoxide] $\xrightarrow{H^{\oplus}}$ phenol ($-OH$) + acetone

Q.60 (1)

Q.61 (1)

Q.62 (4)

$$CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-O-CH_2CH_3 \xrightarrow{HI} CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-I + CH_3CH_2OH$$
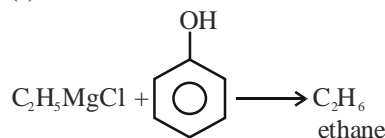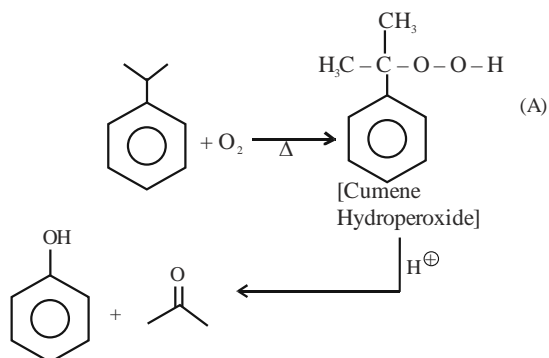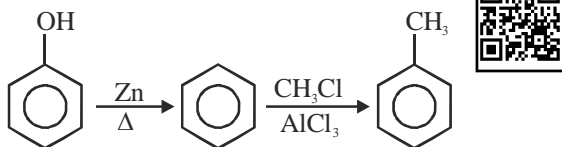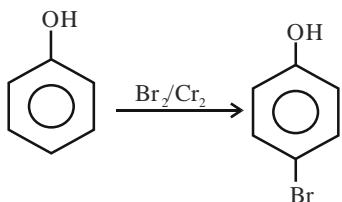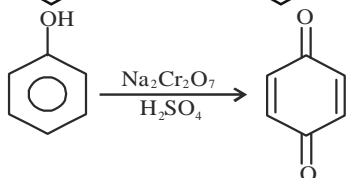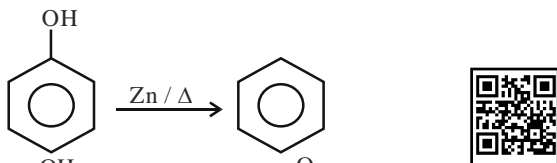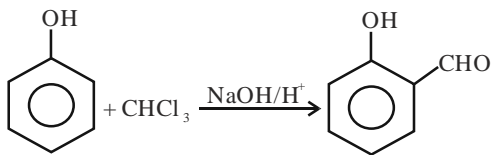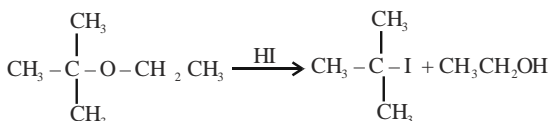
Q.63 (1)
Williamson synthesis is proceed by Sn^2 Reaction

Rate of $Rx^n \propto \dfrac{1}{\text{Steric hindrance}}$ for sn^2

Q.64 (1)

Q.65 (2)

$$\underset{\underset{O}{\overset{\overset{}{||}}{}}}{CH_3-C-H} \xrightarrow{HCN} \underset{\underset{OH}{|}}{CH_3-CH-CN}$$
(Acetaldehyde)

$$\underset{\underset{OH}{|}}{CH_3-CH-COOH} \xleftarrow{H_3O^{\oplus}}$$
[Lactic acid]

Q.66 (2)

$$2CH_3-CHO \xrightarrow{dil.NaOH} CH_3-CH=CH-CHO$$
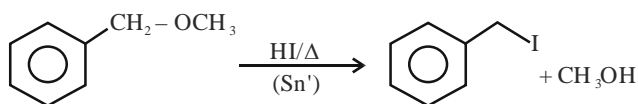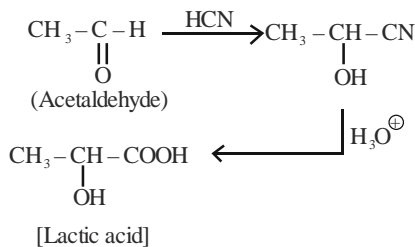
Q.67 (4)
Aldehydes with less +I effect of Alkyl group is most reactive towards NAR.

Q.68 (1)

Q.69 (4)
Propan-1-ol not contain $CH_3-\underset{\underset{OH}{|}}{CH-}$ group so it does not form iodoform.

Q.70 (3)
2,4 - Dinitrophenyl Hydrazine gives yellow or oragne ppt with carbonyl compound.

Q.71 (2)

[Rosenmund Reaction]

Q.72 (1)
Tollen's Reagent Test is not given By ketone.

Q.73 (1)
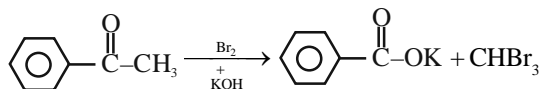
(Halo form reaction)
Acetophenone gives Haloform Test

Q.74 (4)

Conceptual

Q.75 (2)

$CH_3CH_2 - C \equiv N \xrightarrow[H_3O^\oplus]{C_6H_5MgBr}$

$CH_3CH_2 - \underset{\underset{O}{\|}}{C} - C_6H_5$

Q.76 (4)

$CH_3 - Br \xrightarrow{KCN} CH_3CN \underset{(A)}{} \xrightarrow[\Delta]{H_3O^\oplus}$
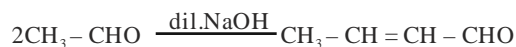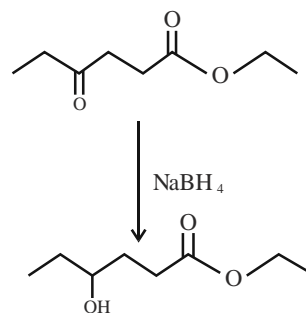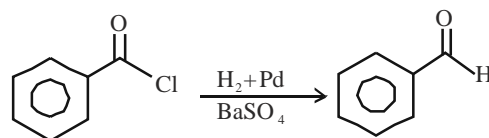
$CH_3CH_2 - OH \underset{(C)}{} \xleftarrow[H_2O]{LiAlH_4} CH_3COOH \underset{(B)}{}$
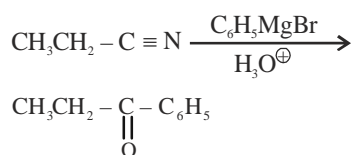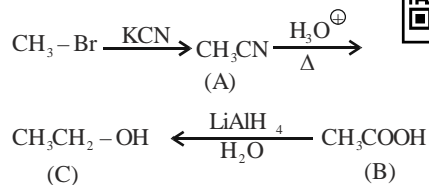
Q.77 (2)
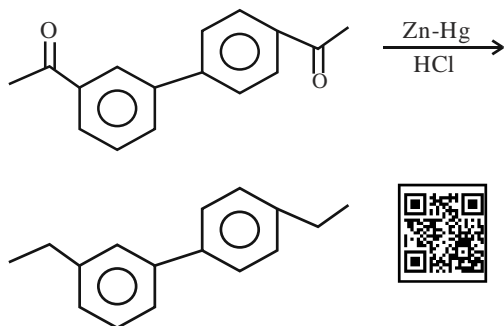
Q.78 (3)

Anisole can give friedel - crafts Reaction.

Q.79 (2)

$\underline{Ka \; value \; \rightarrow}$
$CF_3COOH > HCOOH > Ph-COOH$

$p^{ka} \propto \dfrac{1}{Ka}$

p^{ka} value order
$CF_3COOH < HCOOH < Ph-COOH$

Q.80 (2)

Reactivity $\rightarrow$

$-\underset{\underset{O}{\|}}{C}-Cl > -\underset{\underset{O}{\|}}{C}-O-\underset{\underset{O}{\|}}{C}- > -\underset{\underset{O}{\|}}{C}-OR > -\underset{\underset{O}{\|}}{C}-NH_2$

Q.81 (4)

$C_6H_5CH_2CH_2COOH \xrightarrow{Cl_2/P}$
$C_6H_5 - CH_2\underset{\underset{Cl}{\|}}{CH}-COOH \quad (P)$

$\downarrow$ Alc.KOH

$C_6H_5 - CH = CH - COOH$
(Q)

Q.82 (1)

Q.83 (1)

$R-C\overset{\overset{\displaystyle O \text{-----------} H-O}{}}{\underset{\underset{\displaystyle O-H \text{ ------- } O}{}}{}}C-R$

[Exist as Dimer due to H- Bonding]
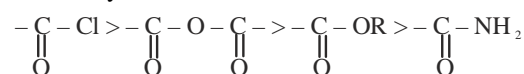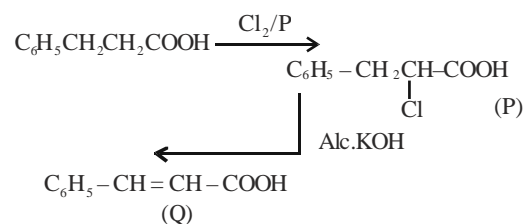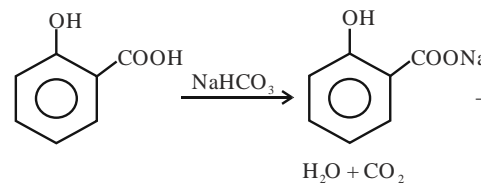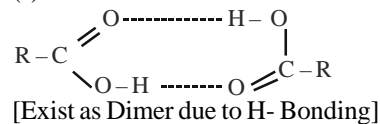
Q.84 (2)
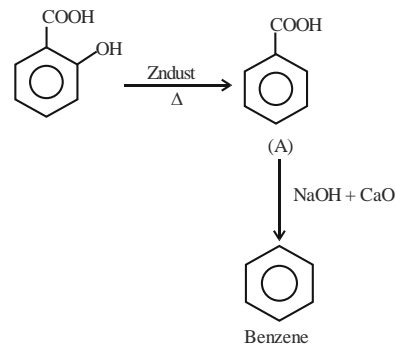
Q.85 (4)
HVZ Reaction can be given by that molecule which contain carboxylic acid and at - least one α-H
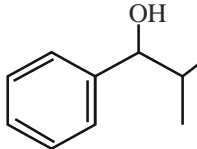
SECTION-B

Q.86 (1)
Boiling point order →
Alcohol > ether > Alkane
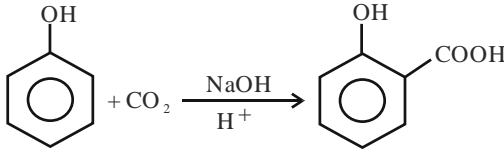
Q.87 (3)
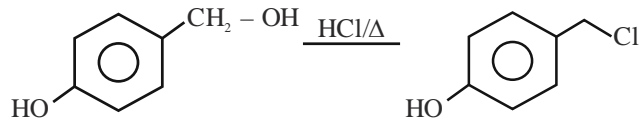
Q.88 (1)

Benzylic Alcohol and 2' Alcohol
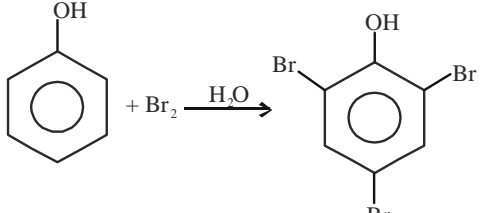
Q.89 (1)

Salicylic acid

Q.90 (1)

Facts

Q.91 (4)

(2,4,6 - tri Bromophenol)

Q.92 (3)

Q.93 (3)
Facts
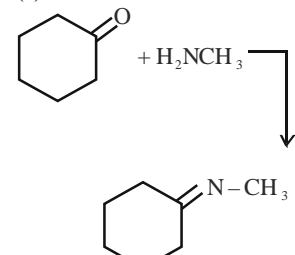
Q.94 (1)

Benzaldehyde does not give fehling Test.

Q.95 (3)

$\xrightarrow[H_3O^{\oplus}]{O_2}$ No reaction

Q.96 (3)

$+ H_2NCH_3$

Q.97 (1)
Facts

Q.98 (3)

$CH_3COOH \xrightarrow{SOCl_2} CH_3COCl$
(A)

$\xrightarrow[\text{Anhy. AlCl}_3]{C_6H_6}$

(B)

(C)

(D)
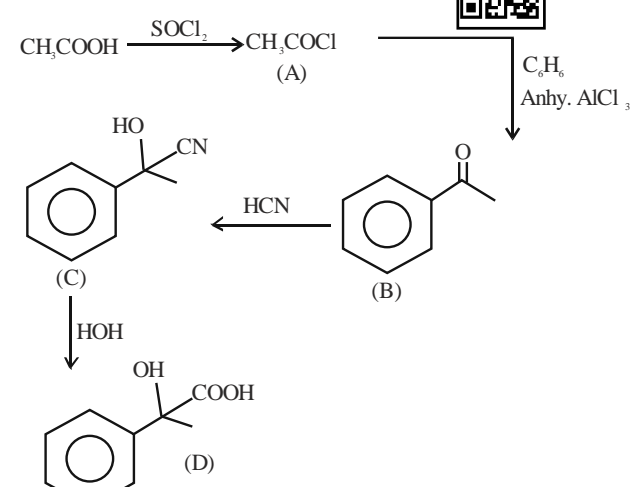
Q.99 (2)
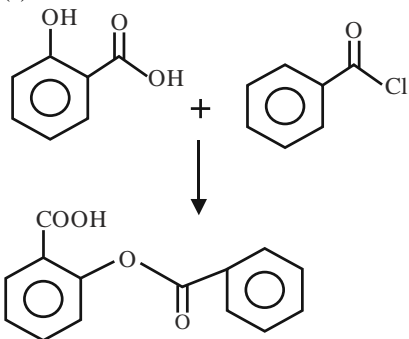
Q.100 (1)

HCOOH $\rightarrow$ formic acid

$CH_3OH \rightarrow$ wood spirit

HCHO $\rightarrow$ Formaldehyde

$CH_3COOH \rightarrow$ Acetic acid

BIOLOGY-I
SECTION-A

Q.101 (2)

New NCERT Pg. No. 143

The diagram in given figure is of skeletal structure of cannabinoid molecule.

Q.102 (3)

New NCERT Pg. No. 140

HIV/AIDS is not spread by mere touch or physical contact; it spreads only through body fluids.

Q.103 (3)

New NCERT Pg. No. 135

Interferons are secreted by virus infected cells which protect non-infected cells from further viral infection.

Q.104 (1)

New NCERT Pg. No. 136

The principle of immunisatin r vacination is based on the property of 'memory' of the immune system. In vaccination, a preparation of antigenic proteins of pathogen or inactivated/weakened pathogen (vaccine) are introduced into the body.

Q.105 (2)

New NCERT Pg. No. 138

Spleen has a large reservoir of erythrocytes.

Q.106 (1)

New NCERT Pg. No. 131

Typhoid, diphtheria, tetanus $\rightarrow$ Bacterial disease

Chikungunya, dengue, common cold $\rightarrow$ Viral disease

Q.107 (2)

New NCERT Pg. No. 132

Entamoeba histolytica is a protozoan parasite in the large intestine of human which causes **amoebiasis (amoebic dysentery).** Symptoms of this disease include constipation, abdominal pain and cramps, stools with excess mucous and blood clots

Q.108 (4)

New NCERT Pg. No. 133

Pneumonia – *Haemophilus*

Ringworm – *Epidermophyton*

Typhoid – *Salmonella*

Filariasis – *Wuchereria*

Q.109 (1)

New NCERT Pg. No. 130

Sustained high fever (39° to 40°C), weakness, stomach pain, cnstipation, headache and ions of appetite are some of the common symptoms of typhoid.
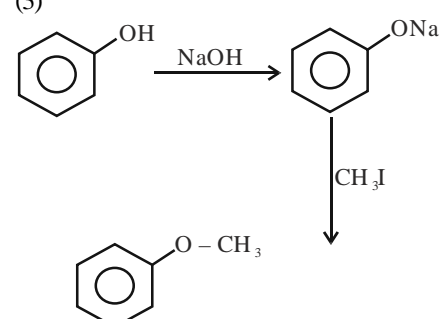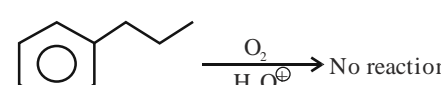
Q.110 (2)

NCERT Pg. No. 136

If a persn is infected with sme deadly micrbes to which quick immune response is required as in tetanus, we need to directly inject the preformed antibodies.

Q.111 (2)

New NCERT Pg. No. 130

Not all parasites are pathogens.

Health is a state of complete physical, mental and social well-being.

Q.112 (1)

New NCERT Pg. No. 137

The exaggerated response to certain allergens present in envirnment is called allergy. It is due to release of chemicals like histamine and serotonin. Use of drugs like anti-histamine, adrenaline and steroids quickly reduce symptons of allergy.

Q.113 (4)

New NCERT Pg. No. 138

There is lymphoid tissue located within the lining of the major tracts (respiratory, digestive and urogenital tracts) called mucosal associated lymphoid tissue (MALT).

Q.114 (4)
New NCERT Pg. No. 130

Awareness about diseases and their effect on different bodily functions, vaccination (immunisation) against infectious diseases, proper disposal of wastes, control of vectors and maintenance of hygiene in food and water resources are necessary for achieving good health.

Q.115 (4)
New NCERT Pg. No. 144

In HIV infection, number of helper-T lymphocytes progressively decrease in number.

Q.116 (3)
New NCERT Pg. No. 131

Typhid fever could be cnfirmed by widal test.

Q.117 (3)
New NCERT Pg. No. 135

Acquired immunity is pathogen specific. It is characterised by memory.

Q.118 (4)
New NCERT Pg. No. 134

Physical barrier $\rightarrow$ Skin
Physiological barrier $\rightarrow$ Saliva
Cellular barrier $\rightarrow$ PMNL
Cytokine barrier $\rightarrow$ Interferon

Q.119 (4)
New NCERT Pg. No. 142

Most f the cancers are treated by combination of surgery, readiotherapy and chemotherapy.

Q.120 (1)
New NCERT Pg. No. 136

In case of snake bite, the injection which is given to the patients, contain preformed antibodies against the snake venom. This type of immunisation is called passive immunisation.

Q.121 (1)
New NCERT Pg. No. 131

Plasmodium enters the human body as sporozoites through the bite of infected female anopheles mosquito.

Q.122 (1)
New NCERT Pg. No. 141

Cancer causing viruses are called oncogenic viruses. Cellular or proto oncogenic are present in normal cells which when gets activated lead to oncogenic transformation of the cells.

Q.123 (1)
New NCERT Pg. No. 152

Alexander fleming while working on Staphylococci bacteria accidentally discovered penicillin.

Q.124 (1)
New NCERT Pg. No. 154

Flocs are clusters of bacteria, predominantly aerobic, bound together by fungal filaments. These masses help in wastewater treatment by facilitating the breakdown of organic matter, thereby cleaning the water.

Q.125 (2)
New NCERT Pg. No. 155

The Ganga and Yamuna action plan was initiated to reduce pollution in these rivers, which are vital for millions of people in India. Launched in 1985, the program focuses on improving water quality by controlling industrial discharge, reducing domestic waste pollution, and enhancing sewage treatment infrastructure.

Q.126 (1)
New NCERT Pg. No. 153

Streptokinase is an enzyme produced by certain bacteria that helps dissolve blood clots. It is used to treat patients who have suffered a myocardial infarction (heart attack) by breaking down the clots that obstruct blood flow to the heart muscles, improving recovery.

Q.127 (4)
New NCERT Pg. No. 151

The conversion of milk to curd increases its nutritional value by increasing the concentration of Vitamin B, particularly B_{12}. This happens due to the activity of Lactobacillus bacteria, which ferment the lactose in milk and enhance its vitamin content.

Q.128 (2)
New NCERT Pg. No. 174

A stirrer in a bioreactor ensures that the contents are evenly mixed, which helps distribute nutrients and oxygen uniformly. This is crucial for optimal microbial growth and product formation, as uneven distribution can lead to nutrient limitations and poor yields.

Q.129 (1)
New NCERT Pg. No. 158

Mycorrhizal associations are symbiotic relationships between fungi and the roots of plants. These fungi help plants absorb essential minerals like phosphorus from the soil, provide resistance to pathogens, and increase tolerance to salinity and drought. However, they do not fix atmospheric nitrogen; this is done by bacteria like Rhizobium.

Q.130 (1)
New NCERT Pg. No. 155, 156

Methanogens are anaerobic archaea found in the rumen of cattle, where they help break down cellulose and produce methane as a byproduct. The technology for biogas production was developed in India through the efforts of the Indian Agricultural Research Institute (IARI) and the Khadi and Village Industries Commission (KVIC).

Q.131 (4)
New NCERT Pg. No. 151, 152

Brewer's yeast (Saccharomyces cerevisiae) is used to ferment malted cereals and fruit juices to produce ethanol (not methanol). However, wine and beer are produced through fermentation without distillation, unlike spirits such as whisky and rum, which require distillation.

Q.132 (1)
New NCERT Pg. No. 157, 158

Dragonflies are used in biological control of mosquitoes not aphids. *Trichoderma* is a free-living fungus used in biological control of plant pathogens. Baculoviruses attack arthropods.

Q.133 (3)
New NCERT Pg. No. 154

In primary treatment of sewage, suspended solids are removed through physical processes like sedimentation and filtration. This stage focuses on the removal of large, insoluble materials before biological treatment.

Q.134 (4)
New NCERT Pg. No. 157

Baculoviruses are species-specific, mainly affecting insects like caterpillars and other arthropods. They are used as biological control agents in pest management due to their narrow spectrum and lack of negative effects on non-target species, making the statement about broad-spectrum application incorrect.

Q.135 (2)
New NCERT Pg. No. 153

The correct matches are:
- Cyclosporin A - produced by *Trichoderma polysporum*
- Statins - produced by *Monascus purpureas*
- Streptokinase - produced by *Streptococcus*
- Lactic acid - produced by *Lactobacillus*.

SECTION-B

Q.136 (2)
New NCERT Pg. No. 136

Hepatitis-B vaccine is produced using recombinant DNA technology using yeast cells.

Q.137 (2)
New NCERT Pg. No. 132

Entamoeba histolytica is a protozoan parasite in the large intestine of human.

Q.138 (3)
New NCERT Pg. No. 135

Antibodies or immunoglobulins are represented as H_2L_2. They are produced by b-lymphocytes and are associated with humoral/blood mediated immune response.

Q.139 (4)
New NCERT Pg. No. 144

Tobacco chewing is mainly associated with increased risk of cancer of the oral cavity.

Q.140 (3)
New NCERT Pg. No. 143

Barbiturates are normally used as medicines to help patients cope with mental illnesses like depression and insomnia.

Q.141 (3)
New NCERT Pg. No. 144

Curiosity, need for adventure and excitment, constitute common causes, which motivate youngsters towards drug and alcohol use.

Q.142 (3)
New NCERT Pg. No. 131, 133

Haemophilus influenzae are responsible for the disease pneumonia in humans. *Trichophyton* and *Epidermophyton* are responsible for ringworms which is one of the most common infectious diseases in man.

Rhino viruses represent one such group of viruses which cause one of the most infectious human ailments – the **common cold**. They infect the nose and respiratory passage but not the lungs. The common cold is characterised by nasal congestion and discharge, sore throat, hoarseness, cough, headache, tiredness, etc., which usually last for 3-7 days

Q.143 (3)
New NCERT Pg. No. 138
AIDS can also spread by transfusion of contained blod and blood products, by sharing infected needles, from infected mother to foetus.

Q.144 (3)
New NCERT Pg. No. 134
Dengue and chikungunya are viral diseases that spread through *Aedes aegypti* mosquito.

Q.145 (1)
New NCERT Pg. No. 132
Fertilisation and development of malarial parsite takes place in mosquito's gut.

Q.146 (3)
New NCERT Pg. No. 155
Biogas primarily consists of methane (CH_4), hydrogen sulphide (H_2S), and carbon dioxide (CO_2). It is produced by the anaerobic digestion of organic matter, such as plant and animal waste, in biogas plants.

Q.147 (3)
New NCERT Pg. No. 158
Agrobacterium is not a biofertilizer; it is a bacterium used in plant genetic engineering to introduce foreign DNA into plant cells. In contrast, Nostoc, Glomus, and *Rhizobium* are biofertilizers that help plants by fixing nitrogen or improving nutrient uptake.

Q.148 (4)
New NCERT Pg. No. 156
IARI stands for Indian Agricultural Research Institute, a premier agricultural research institution in India that has made significant contributions to advancements in crop science and agricultural practices.

Q.149 (2)
New NCERT Pg. No. 158
Glomus is a genus of fungi that forms mycorrhizal associations with plant roots. These fungi help plants absorb nutrients, particularly phosphorus, from the soil and enhance plant growth.

Q.150 (4)
New NCERT Pg. No. 157
• Assertion: Baculoviruses are broad-spectrum insecticides (False).
• Reason: Baculoviruses are species-specific and are an excellent choice for biocontrol in sensitive areas (True).
• The assertion is false because baculoviruses are not broad-spectrum insecticides; they are narrow-spectrum and target specific insect pests.

BIOLOGY-II
SECTION-A

Q.151 (3)
New NCERT Pg. No. 132

When the mosquito bites another human, sporozoites are injected with bite.

Mature infective stages (sporozoites) escape from gut and migrate to the mosquito salivary glands.

Sporozoites

Salivary glands

Parasite (sporozoites) reach the liver through blood

Mosquito Host

Fertilization and development take place in the mosquito's gut.

The parasite reproduces asexually in liver cells, bursting the cell and releasing into the blood.

Human Host

Female mosquito takes up gametocytes with blood meal.

Gametocytes

Female

Male

Sexual stages (gametocytes) develop in red blood cells.

Parasites reproduce asexually in red blood cells, bursting the red blood cells and causing cycles of fever and other symptoms. Released parasites infect new red blood cells.

Q.152 (2)
New NCERT Pg. No. 143

Flowering branch of *Datura*

Q.153 (2)
New NCERT Pg. No. 137

One, higher vertebrates can distinguish foreign molecules as well as foreign organisms.

Most of the experimental immunology deals with this aspect. Two, sometimes, due to genetic and other unknown reasons, the body attacks self-cells.

Q.154 (2)
New NCERT Pg. No. 137

The antibodies produced in allergy are of IgE type.

Q.155 (2)
New NCERT Pg. No. 143

Cocaine interferes with transport f neurotransmitter dopamine and have potent stimulating action on central nervous system.

Q.156 (1)
New NCERT Pg. No. 143

Amphetamines are CNS-stimulants.

Q.157 (3)
New NCERT Pg. No. 144

The period between 12-18 years of age may be thought of as adolescence period.

Q.158 (3)
New NCERT Pg. No. 141

Metastasis is the property by virtue of which tumour cells are sloughed off and reach distant sites through blood.

Q.159 (3)
New NCERT Pg. No. 133

Symptoms of ascariasis include internal bleeding, muscular pain, fever, anaemia, blockage of the intestinal passage etc.

Q.160 (3)
New NCERT Pg. No. 143

Cannabinoids are known for their effects on cardiovascular system of the body.

Q.161 (1)
New NCERT Pg. No. 133

Wuchereria (*W. bancrofti* and *W. malayi*), the filarial worms cause a slowly developing chronic inflammation of the organs in which they live for many years, usually the lymphatic vessels of the lower limbs and the disease is called **elephantiasis** or **filariasis.**

Q.162 (3)
New NCERT Pg. No. 139

The incubation period for AIDS is usually from a few months to many years (5 - 10years).

Q.163 (2)
New NCERT Pg. No. 142

Patients are given substances called bilogical response modifiers such as α-interferon which activates their immune system and helps in destroying the tumor.

Q.164 (2)
New NCERT Pg. No. 141

Property of contact inhibition by virtue of which contact with other cellls inhibits the uncontrolled growth of normal cells is lost in cancerus cells.

Q.165 (2)
New NCERT Pg. No. 142

Majority of the drugs which are commonly abused are obtained from flowering points, while some are obtained from fungi.

Q.166 (3)
New NCERT Pg. No. 131

Haemozoin is a toxic substance released from rupturing of RBCs infected with malarial parasite, *Plasmodium*.

Q.167 (2)
New NCERT Pg. No. 136

If a person is infected with some deadly microbes to which quick immune response is required as in tetanus, we need to directly inject the preformed antibodies, or antitoxin (a preparation containing antibodies to the toxin).

Q.168 (4)
New NCERT Pg. No. 131

Common cold is spreaded by droplet infection.

Q.169 (3)
New NCERT Pg. No. 141

MRI uses strong magnetic fields and non-ionising radiatins to accurately detect pathological and physiological changes in the living tissue.

Q.170 (2)
New NCERT Pg. No. 136

The body is able to differentiate 'self' and 'non self' and the cell-mediated immune response is responsible for the graft rejection.

Q.171 (4)
New NCERT Pg. No. 135, 136

Oral polio vaccine contains a preparation of antigenic proteins of pathogen or inactivated/weakened/attenuated pathogen.

Q.172 (1)
New NCERT Pg. No. 134

PMNL are polymorphonuclear leukocytes.

Q.173 (4)
New NCERT Pg. No. 151

The large holes in Swiss cheese are caused by the production of CO_2 by the bacterium *Propionibacterium sharmanii* during fermentation.

Q.174 (3)
New NCERT Pg. No. 151

During the fermentation of dough, cheese-making, and production of alcoholic beverages, carbon dioxide (CO_2) is the main gas produced. It helps the dough rise and contributes to the formation of bubbles in beverages.

Q.175 (1)
New NCERT Pg. No. 154

Activated sludge is formed during the secondary treatment of sewage and consists of a mass of microorganisms that decompose organic matter. A portion of this sludge is returned to the aeration tank as inoculum to continue the breakdown of organic pollutants.

Q.176 (1)
New NCERT Pg. No. 151

The fungus *Penicillium roqueforti* is used in the ripening of Roquefort cheese, giving it its characteristic flavor and texture.

Q.177 (1)
New NCERT Pg. No. 151

Toddy is a traditional alcoholic drink popular in South India. It is made by fermenting the sap of toddy palm, and is a common beverage in coastal regions of India.

Q.178 (1)
New NCERT Pg. No. 154

In the primary treatment of sewage, floating debris such as plastic, paper, and other large particles are removed through filtration, followed by sedimentation to settle suspended solids.

Q.179 (3)
New NCERT Pg. No. 153

Streptokinase is not a fungal product; it is produced by bacteria (*Streptococcus*). In contrast, Cyclosporin A, Statins, and Citric acid are all products derived from fungi.

Q.180 (3)
New NCERT Pg. No. 157

Baculoviruses are excellent candidates for species-specific narrow spectrum insecticidal applications, making them ideal for targeted pest control without harming non-target organisms in ecologically sensitive areas.

Q.181 (2)
New NCERT Pg. No. 151

Propionibacterium sharmanii is the bacterium responsible for producing large amounts of CO_2, which forms the characteristic holes in Swiss cheese during its ripening process.

Q.182 (2)
New NCERT Pg. No.157

The free-living fungus Tricho derma is used in the biological control of plant diseases. It acts as a biocontrol agent by antagonizing plant pathogens and promoting plant growth, particularly in agriculture.

Q.183 (1)
New NCERT Pg. No. 155

The Ganga Action Plan was initiated by the Ministry of Environment and Forests in India. Its primary objective is to reduce pollution in the Ganga River by improving sewage treatment infrastructure and regulating industrial discharges.

Q.184 (1)
New NCERT Pg. No. 152

Wine and beer are alcoholic drinks produced through fermentation but not distillation. In contrast, drinks like whisky and rum undergo distillation to increase alcohol content after fermentation.
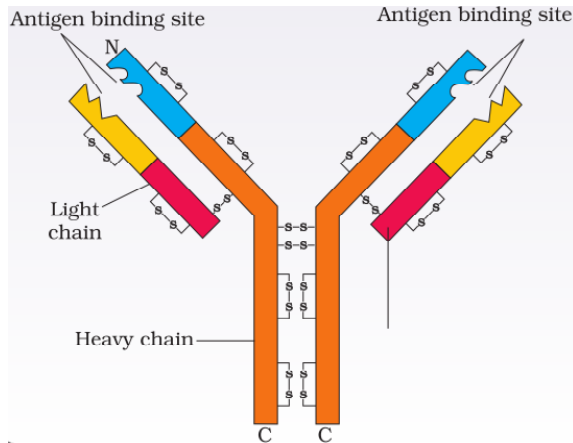
Q.185 (3)
New NCERT Pg. No. 154

Biochemical Oxygen Demand (BOD) is used to estimate the amount of organic matter present in sewage water. A higher BOD indicates a higher level of organic pollution, as more oxygen is required by microorganisms to break down the organic material.

SECTION-B

Q.186 (4)
New NCERT Pg. No. 135

An antibody molecule consists antigen-binding site.

Q.187 (1)
New NCERT Pg. No. 140

The macrophages continue to produce virus and acts like a HIV factory.

Q.188 (1)
New NCERT Pg. No. 136

Vaccine against diphtheria is an example of artificially acquired active immunity.

Q.189 (3)
New NCERT Pg. No. 142

Chemotherapentic drugs have common side effects like hair loss, anemia etc.

Q.190 (4)
New NCERT Pg. No. 130

Good health decreases infant and maternal mortality.

Q.191 (2)
New NCERT Pg. No. 131

Pneumonia is a bacterial disease characterised by fluid-filled air sacs (alveoli) of lungs.

Q.192 (2)
New NCERT Pg. No. 145

factors that have been seen to be associated with drugand alcohol abuse among adolescents are unstable or unsupportive family structures and peer pressure.

Q.193 (3)
New NCERT Pg. No. 140

NACO stands for national AIDS control organisation.

Q.194 (4)
NCERT Pg. No. 130

Health does not simply mean 'absence of diseases' or 'physical fitness'. It could be defined as a state of complete physical, mental and social well-being.

Q.195 (2)
New NCERT Pg. No. 135

Anamnestic respnse is secondary response that is generated when same pathogen enters for second time in body.

Q.196 (3)
New NCERT Pg. No.158

• Statement-I: Biofertilizers do not decrease the nutrient quality of the soil (Incorrect).
• Statement-II: Bacteria, fungi, and cyanobacteria are the main sources of biofertilizers (Correct).
• Biofertilizers enrich the soil by increasing nutrient availability rather than depleting it.

Q.197 (2)
New NCERT Pg. No. 152

Antibiotics are chemical substances produced by microbes that kill or inhibit the growth of other microbes. The term "antibiotic" does not refer to life "against humans" but rather refers to its action against harmful microbes.

Q.198 (4)
New NCERT Pg. No. 154

The sewage water is treated till the BOD is reduced

Q.199 (3)
New NCERT Pg. No. 158

Mycorrhizal associations enhance plant resistance to pathogens, drought, and salinity, but they do not provide resistance to herbicides. Herbicides are chemicals that kill unwanted plants (weeds), and mycorrhiza does not protect plants from these chemicals.

Q.200 (2)
New NCERT Pg. No. 151

Lactobacillus bacteria convert milk into curd by causing the coagulation and partial digestion of milk proteins, primarily casein. This process gives curd its thick texture and sour taste due to the production of lactic acid.