Q.1 The dimensions of energy per unit volume is the same as that of -

(a) torque (b) pressure

(c) acceleration (d) force

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Unit-dimension**

Sol. Energy density = $\frac{J}{m^3} = N/m^2$

Unit same as pressure.

Q.2 A uniform thin ring of mass 0.4 kg rolls without slipping on a horizontal surface with a linear velocity of 10 cm/s. The kinetic energy of the ring is -

(a) 4×10^{-3} joules (b) 4×10^{-2} joules

(c) 2×10^{-3} joules (d) 2×10^{-2} joules

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Rotational dynamics**

Sol. Kinetic energy of a rolling body (E)

$$= \frac{1}{2}mv^2\left(1+\frac{k^2}{R^2}\right)$$

$$E = \frac{1}{2}(.4)(.1)^2(1+1) = 4 \times 10^{-3}\ J$$

Q.3 A car of mass 1000 kg travelling at a speed of 72 km/hr hits a tree and comes to rest in 0.2 seconds. The average force on the car during the impact is -

(a) 36×10^4 N (b) 1×10^5 N

(c) 36×10^7 N (d) 36×10^5 N

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Laws of motion**

Sol. Average force on the car $F = \frac{\Delta P}{\Delta t} = \frac{mv}{\Delta t}$

$\because v = 72\frac{km}{hr} = 20$ m/s

$\therefore F = \frac{1000 \times 20}{0.2}$

$F = 1 \times 10^5$ N

Q.4 The distance x, in metres, travelled by a particle in time t seconds is given by

$$x = 0.5\,t^3 + 2t^2$$

The acceleration of the particle at t = 2 sec is

(a) 2 m/s^2 (b) 4 m/s^2

(c) 8 m/s^2 (d) 10 m/s^2

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Mechanics (one dimension motion)**

Sol. $v = \frac{dx}{dt} = 1.5\,t^2 + 4t$

$a = 3t + 4$

$a_{t\,=\,2\,sec} = 3 \times 2 + 4 = 10$ m/sec^2

Q.5 Assume the earth to be a sphere of radius R. If g is the acceleration due to gravity at any point on the earth's surface, the mass of the earth is -

(a) $\frac{gR}{G}$ (b) $\frac{g^2R^2}{G}$

(c) $\frac{gR^2}{G}$ (d) $\frac{g^2R}{G}$

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Gravitation**

Sol. $g = \frac{GM}{R^2}$

$\Rightarrow$ $M = \frac{gR^2}{G}$

Q.6 A body is projected with kinetic energy T at the angle of maximum range. Its kinetic energy at the highest point of the trajectory will be

(a) T (b) $\frac{T}{\sqrt{2}}$

(c) $\frac{T}{2}$ (d) Zero

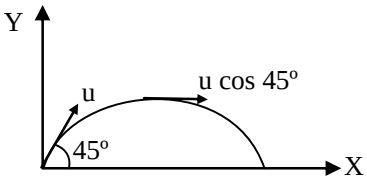
Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Mechanics (Projectile motion)**

Sol.

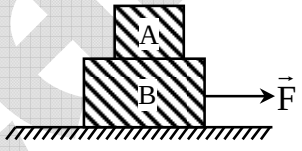


$K.E_B = \frac{1}{2}mu^2$

$K.E_T = \frac{1}{2}m(u\cos 45°)^2 = \frac{1}{2}\left(\frac{1}{2}mu^2\right)$

$K.E_T = \frac{K.E_B}{2} = T/2$

Q.7 Block A of mass 4 kg and block B of mass 6 kg are resting on a horizontal surface as shown in the figure. There is no friction between the block B and the horizontal surface. The coefficient of friction between the two blocks is 0.2. If the value of g = 10 ms^{-2}, the maximum horizontal force F that can be applied on block B without any relative motion between A and B is



(a) 20N (b) 40 N

(c) 60 N (d) 100 N

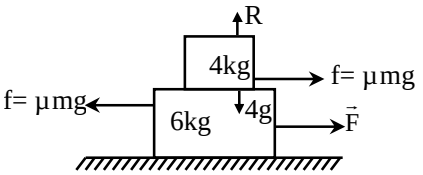
Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Friction**

Sol.



Friction between the blocks f = μmg

= .2 × 4 × 10 = 8 N

For 6 kg block F – f = 6a

F = 6a + 8 ...(i)

For 4 kg block f = 4a

8 = 4a

$a = 2m/s^2$ ...(ii)

blocks have no relative motion so there acceleration will be same. Putting the value of 'a' from eq. (i) to (ii)

F = 6 × 2 + 8 = 20 N

Q.8 A body is rotating with angular momentum L. If I is its moment of inertia about the axis of rotation its kinetic energy of rotation is

(a) $\frac{1}{2}IL^2$ (b) $\frac{1}{2}IL$

(c) $\frac{1}{2}(I^2/L)$ (d) $\frac{1}{2}\frac{L^2}{I}$

Ans. **[d]**

*** The same question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Rotational dynamics**

Sol. Rotational kinetic energy

$$E = \frac{1}{2}I\omega^2 = \frac{I\omega^2}{2I} = \frac{L^2}{2I}$$

Q.9 The unit of surface tension is

(a) N.m (b) N/m

(c) $N.m^2$ (d) N

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Unit-Dimension**

Sol. $T = \frac{F}{L}$ unit $= \frac{N}{m}$

Q.10 The velocity of water flowing in a non-uniform tube is 20 cm/s at a point where the tube radius is 0.2 cm. The velocity at another point, where the radius is 0.1 cm is

(a) 80 cm/s (b) 40 cm/s

(c) 20 cm/s (d) 5 cm/s

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Fluid mechanics**

Sol. From $A_1v_1 = A_2v_2$

$\pi(.2)^2 \times 20 = \pi(.1)^2 \times v_2$

$v_2 = 80$ cm/s

Q.11 The excess pressure inside a soap bubble A is twice that in another soap bubble B. The ratio of volumes of A and B is

(a) 1 : 2 (b) 1 : 4

(c) 1 : 8 (d) 1 : 16

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Surface tension**

Sol. $P_{excess} = \frac{4T}{r} \propto \frac{1}{r}$

$$\frac{2}{1} = \frac{P_A}{P_B} = \frac{r_B}{r_A} \Rightarrow r_A : r_B = 1 : 2$$

$$\frac{V_A}{V_B} = \left(\frac{r_A}{r_B}\right)^3 = 1 : 8$$

Q.12 A body at rest splits into three parts of mass m, m and 4m respectively. The two equal masses fly off perpendicular to each other and each with speed of V. The speed of 4m will be

(a) $\frac{V}{2\sqrt{2}}$ (b) $\frac{V}{\sqrt{2}}$

(c) $\frac{V}{2}$ (d) $\sqrt{2}V$

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Work, Power, Energy**

Sol. From the law of conservation of linear momentum

$\vec{P}_1 + \vec{P}_2 + \vec{P}_3 = 0$

$|\vec{P}_3| = |\vec{P}_1 + \vec{P}_2|$

$m_3V_3 = \sqrt{(m_1V_1)^2 + (m_2V_2)^2}$

$4mV_3 = \sqrt{(mV)^2 + (mV)^2}$

$4mV_3 = \sqrt{2}mV$

$V_3 = \frac{V}{2\sqrt{2}}$

Q.13 300 calories of heat is supplied to raise the temperature of 50 gm of air from 20°C to 30°C without any change in its volume. Change in internal energy per gram of air is

(a) zero (b) 0.6 calories

(c) 1.2 calories (d) 6.0 calories

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Heat and thermodynamics**

Sol. $\Delta Q = MC_VdT$

$$C_V = \frac{\Delta Q}{MdT} = \frac{300}{50\times10} = \frac{3}{5} \ \frac{cal}{gm^oC}$$

Change in internal energy in any thermodynamics process.

$dU = MC_VdT$

$= 1 \times \frac{3}{5} \times 10 = 6$ cal

Q.14 The thermal capacity of any body is

(a) a measure of its capacity to absorb heat

(b) a measure of its capacity to provide heat

(c) the quantity of heat required to raise its temperature by a unit degree

(d) the quantity of heat required to raise the temperature of a unit mass of the body by a unit degree

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy (based on definition)**

*** Topic -Calorimetry**

Sol. $H_c = Mc = \frac{\Delta Q}{\Delta T}$

* Required heat to change unit temperature for complete mass of body called heat capacity.

Q.15 The absorptive power of a perfectly black body is

(a) zero (b) infinity

(c) 0.5 (d) 1.0

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Radiation**

Sol. $e_{I.B.B.} = a_{I.B.B} = 1.$

Q.16 A diatomic molecule has

(a) 1 degree of freedom

(b) 3 degrees of freedom

(c) 5 degrees of freedom

(d) 6 degrees of freedom

Ans. **[c]**

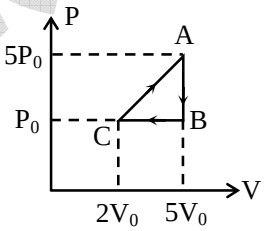
*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy fact based question.**

*** Topic -K.T.G.**

Sol. $f_{di} = 5 = 3(\text{translation}) + 2\ (\text{rotational})$

Q.17 The work done by a gas taken through the closed process ABCA, see figure, is



(a) $6P_0V_0$ (b) $4P_0V_0$

(c) P_0V_0 (d) zero

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Thermodynamics**

Sol. Work done from P-V curve is equal to Area inclosed between "P–V" curve and "V" axis

$$W = \frac{1}{2}\ (\text{base})\ (\text{height})$$

$$= \frac{1}{2}\ (5V_0 - 2V_0)\ (5P_0 - P_0)$$

$$= 6P_0V_0$$

Q.18 The displacement x as a function of time t of a simple harmonic motion is represented by

(a) $\frac{d^2x}{dt^2} - A^2x = 0$

(b) $\frac{dx}{dt} + A^2x = 0$

(c) $\frac{d^2x}{dt^2} + A^2x^2 = 0$

(d) $\frac{d^2x}{dt^2} + A^2x = 0$

Where A is a positive constant.

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -S.H.M.**

Sol. For S.H.M. $\frac{d^2x}{dt^2} = -\omega^2x$

$$\boxed{\frac{d^2x}{dt^2} + \omega^2x = 0}$$

Here $\omega = A =$ constant

Q.19 The potential energy of a spring when stretched by a distance *x* is E. The energy of the spring when stretched by x/2 is -

(a) E (b) E/2

(c) E/4 (d) E/6

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Easy**
*** Topic -Work, Power, Energy**

Sol. $$\frac{E}{E'} = \frac{\frac{1}{2}kx^2}{\frac{1}{2}k\left(\frac{x}{2}\right)^2}$$

$$\frac{E}{E'} = \frac{4}{1}$$

$$E' = \frac{E}{4}$$

Q.20 The air column in a pipe with both ends open vibrates with a fundamental frequency f. If one of the ends of the pipe is closed, the fundamental frequency will be -
(a) f (b) 2f
(c) $\frac{3}{2}$f (d) $\frac{f}{2}$

Ans. **[d]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Easy**
*** Topic -Wave theory**

Sol. $f_{O.O.P} = \frac{V}{2L}$

$f_{C.O.P} = \frac{V}{4L}$

$$\boxed{f_{C.O.P.} = \frac{f_{O.O.P}}{2}} = \frac{f}{2}$$

Q.21 The displacement y of a particle varies with time t, in seconds, as
$y = 2\cos(\pi t + \pi/6)$.
The time period of the oscillations is -
(a) 2 sec (b) 4 sec
(c) 1 sec (d) 0.5 sec

Ans. **[a]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Very easy**
*** Topic -Wave theory**

Sol. $\omega = \pi = \frac{2\pi}{T} \Rightarrow T = 2$ sec

Q.22 The number of beats per second resulting from the vibration
$x_1 = a\cos 500\,\pi t$
and $x_2 = a\cos 508\,\pi t$
is
(a) zero (b) 2
(c) 4 (d) 8

Ans. **[c]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Average**
*** Topic -Wave theory**

Sol. $\Delta n = n_2 - n_1$

$$= \frac{508\pi}{2\pi} - \frac{500\pi}{2\pi} = 4$$

Q.23 A point object is placed at the focus of a double concave lens. The image is formed -
(a) at infinity
(b) between the focus and the lens
(c) at focus
(d) between the focus and infinity

Ans. **[b]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Easy**
*** Topic -Ray optics**

Sol. For concave lens

$u = -f$, $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

$$\frac{1}{v} - \frac{1}{-f} = \frac{1}{-f}$$

$$v = -\frac{f}{2}$$

So image will be in between focus and lens.

Q.24 A ray of light traveling in air is incident on a medium of refractive index μ. If the angle of refraction is twice the incident angle, the incident angle is -
(a) $\sin^{-1}\left(\frac{1}{2\mu}\right)$ (b) $\sin^{-1}(2\mu)$
(c) $\cos^{-1}(2\mu)$ (d) $\cos^{-1}\left(\frac{1}{2\mu}\right)$

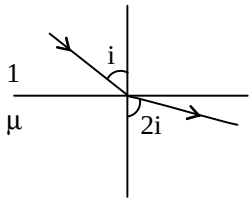
Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Ray optics**

Sol. Using snells law



$\sin i = \mu \sin 2i$

$\sin i = \mu\, 2 \sin i \cos i$

$\cos i = \frac{1}{2\mu}$

$i = \cos^{-1}\left(\frac{1}{2\mu}\right)$

Q.25 Two coherent Light sources emit light of the -

(a) same intensity

(b) same pitch

(c) constant but different wavelengths

(d) same frequency having constant phase difference

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Interference and diffraction**

Sol. Light emitted by two coherent sources will have same frequency and constant phase difference.

Q.26 If in Fraunhoffer diffraction due to a single slit, the slit width is increased, the width of the central maximum will -

(a) increase

(b) decrease

(c) not change

(d) change depending upon the wavelength of light used

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Interference and diffraction**

Sol. In Fraunhoffer diffraction width of the central maximum = $\frac{2\lambda D}{a}$

Where 'a' is slit width

So on increasing 'a' (slit width) width of the central maximum decreases.

Q.27 The ratio of the coulomb to the gravitational force between two electrons is of the order of

(a) 10^{55} (b) 10^{42} (c) 10^{28} (d) 10^{12}

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet (Que.2, Ex. 1)**

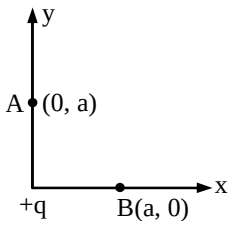
*** Average**

*** Topic -Electrostatics**

Sol. $\frac{F_e}{F_m} = \frac{\left(\frac{Kee}{r^2}\right)}{\left(\frac{Gmm}{r^2}\right)}$

$= \frac{9\times10^9\times(1.6\times10^{-19})^2}{6.6\times10^{-11}\times(9\times10^{-31})^2} = 10^{42}$

Q.28 Work done in moving a charge Q from the point B(x = a, y = 0) to the point A (x = 0, y = a) in the field of charge +q at origin is -



(a) zero (b) $\frac{qQ}{4\pi\varepsilon_0(\sqrt{2}a)}$

(c) $\frac{qQ}{4\pi\varepsilon_0(2a)}$ (d) $\frac{Qq\sqrt{2}a}{4\pi\varepsilon_0}$

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Electrostatics**

Sol. $W_{B \to A} = Q (V_A - V_B)$

but $V_A = V_B$

$\therefore W = 0$

Q.29 A charge +Q is placed at the centre of a spherical surface of radius R. Another charge –Q/2 is placed at a distance of R/2 from the centre of the surface. A third charge –Q/2 is at a distance 3R/2 from the centre. The electrostatic flux linked with the surface is -

(a) zero (b) $\frac{Q}{2\varepsilon_0}$

(c) $\frac{3Q}{2\varepsilon_0}$ (d) $\frac{2Q}{\varepsilon_0}$

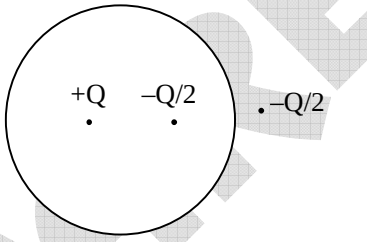
Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Electrostatics**

Sol. From Gauss law



$$Q_{net} = \frac{\Sigma q}{\epsilon_0} = \frac{\left(+Q - \frac{Q}{2}\right)}{\epsilon_0} = \frac{Q}{2\epsilon_0}$$

Q.30 The uniform electric field in the space between the plates of a parallel plate condenser of plate separation d and plate areas A is E. The energy of this charged condenser is -

(a) $\frac{1}{2} \cdot \frac{\varepsilon_0 E^2}{A.d}$ (b) $\varepsilon_0 E^2 Ad$

(c) $\frac{1}{2} \varepsilon_0 E^2 Ad$ (d) $\frac{1}{2} \cdot \frac{\varepsilon_0^2 E^2}{Ad}$

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Capacitor**

Sol. Energy stored = $\frac{1}{2} CV^2$

$= \frac{1}{2} \left(\frac{\epsilon_0 A}{d}\right) (V^2)$

$= \frac{1}{2} \epsilon_0 \left(\frac{V}{d}\right)^2 Ad$

$= \frac{1}{2} \epsilon_0 E^2 Ad$

Q.31 The capacity of a parallel plate condenser without any dielectric is C. If the distance between the plates is doubled and the space between the plates is filled with a substance of dielectric constant 3, the capacity of the condenser becomes

(a) $\frac{3}{4}C$ (b) $\frac{9}{2}C$

(c) $\frac{2}{3}C$ (d) $\frac{3}{2}C$

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Capacitor**

Sol. $C = \frac{\epsilon_0 A}{d}$ and $C' = \frac{\epsilon_0 (3)A}{2d} \Rightarrow C' = \frac{3}{2}C$

Q.32 The SI unit of electrostatics flux is

(a) volt.m^2 (b) volt.m

(c) volt / m (d) volt /m^2

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Very easy**

*** Topic -Electrostatics**

Sol. Unit of flux → volt × m

Q.33 A wire of length 1 m and cross-sectional area 4×10^{-9} m^2 is made of a metal of resistivity 6×10^{-8} Ω.m. The potential difference needed to pass a current of 2 amp. in the wire is

(a) 75 volt (b) 50 volt

(c) 30 volt (d) 10 volt

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Current Electricity**

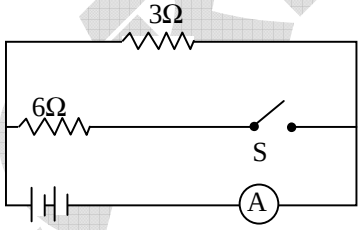
Sol. $V = I R$

$= I\left(\frac{\rho\ell}{A}\right)$

$= 2\left(\frac{6\times10^{-8}\times1}{4\times10^{-9}}\right)$

$= 30$ volt

Q.34 In the circuit shown, the resistances of the ammeter A and battery are zero. Ammeter reads 0.2 A when the switch S is open. When the switch S is closed, the ammeter will read



(a) 0.1 A (b) 0.2 A

(c) 0.3 A (d) 0.6 A

Ans. **[c]**

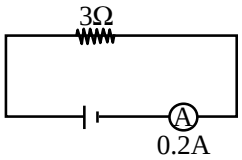
*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

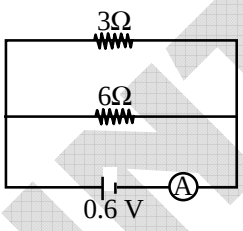
*** Topic -Current Electricity**

Sol. Switch S is open then

⇒ voltage of battery = 3 × 0.2 = 0.6 volt



switch s is closed then



$R_{eq} = \frac{3\times6}{3+6} = 2\Omega$

$I = \frac{0.6}{2} = 0.3$ A

Q.35 The cold junction of a thermocouple is at 0ºC, The thermo e.m.f. ε, in volts, generated in this thermocouple varies with temperatures tºC of the hot junction as

$$\varepsilon = 6 + 4t - \frac{t^2}{32}$$

The neutral temperature of the thermocouple is

(a) 100ºC (b) 76ºC

(c) 64ºC (d) 50ºC

Ans. **[c]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Thermo electricity**

Sol. $E = 6 + 4t - \frac{t^2}{32}$

At neutral temp. $\frac{dE}{dt} = 0$

$\Rightarrow \ 4 - \frac{2t}{32} = 0 \ \Rightarrow \ t = 64^oC$

Q.36 A bar magnet is placed in a non-uniform magnetic field. The bar magnet, in general, will experience
(a) a linear force and no torque
(b) a torque and no linear force
(c) both a torque and a linear force
(d) neither a torque nor a linear force

Ans. **[c]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Average**
*** Topic -Magnetism**

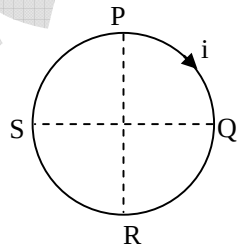
Sol. Magnetic dipole in non uniform magnetic field experiences both force & torque.

Q.37 Curie temperature is the temperature above which
(a) paramagnetic material becomes diamagnetic
(b) paramagnetic material becomes ferromagnetic
(c) diamagnetic material becomes paramagnetic
(d) ferromagnetic material becomes paramagnetic

Ans. **[d]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Very Easy**
*** Topic -Magnetic Property of Material**

Sol. After Curie temperature
Ferromagnetic becomes Paramagnetic

Q.38 A circular coil PQRSP is placed in a uniform magnetic field. When a current flows through the coil, the force on the segment PQ is $\vec{F}$. The force on the remaining segment QRSP is



(a) $3\vec{F}$ (b) $-3\vec{F}$ (c) $\vec{F}$ (d) $-\vec{F}$

Ans. **[d]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Average**
*** Topic -Magnetic Effect of Current**

Sol. $\because\ F_{\text{close loop}} = 0$

$\Rightarrow \vec{F}_{PQ} + \vec{F}_{QRSP}$

$\Rightarrow \vec{F} + \vec{F}_{QRSP} = 0 \qquad \Rightarrow \vec{F}_{QRSP} = -\vec{F}$

Q.39 A charged particle moves in a circle of radius R under the influence of a constant transverse magnetic field. The time period of revolution is
(a) independent of R (b) proportional to R
(c) proportional to $\frac{1}{R}$ (d) proportional to $\frac{1}{R^2}$

Ans. **[a]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Average**
*** Topic -Magnetic Effect of Current**

Sol. $T = \frac{2\pi m}{qB} \propto R^0$

Q.40 The eddy current loss in a transformer can be reduced by using a core material of
(a) high density (b) low density
(c) high resistivity (d) low resistivity

Ans. **[c]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Average**
*** Topic-Electromagnetic Induction**

Sol. Due to high resistivity, eddy currents are less so losses will be less.

Q.41 The unit of mutual inductance of a coil can be expressed as
(a) weber. amp. (b) weber / amp.
(c) weber . metre (d) weber / metre

Ans. **[b]**
*** The similar question can be found in CP Class notes & CP Exercise sheet**
*** Easy**
*** Topic -EMI**

Sol. $M = \frac{\phi_2}{I_1} = \frac{\phi_1}{I_2}$

$\therefore$ Unit $\rightarrow \frac{\text{Weber}}{\text{Amp.}}$

Q.42 If the values of resistance, inductive reactance and capacitative reactance in a series LCR a.c. circuit are 3 Ω, 10 Ω and 6 Ω respectively, the total impedance of the circuit is

(a) 25 Ω (b) $\sqrt{7}$ Ω

(c) 5 Ω (d) 19 Ω

Ans. [c]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

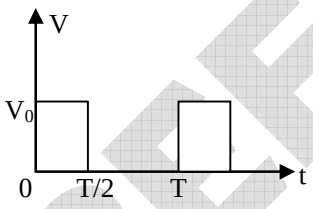
*** Topic -Alternating current**

Sol. $Z = \sqrt{(X_L - X_C)^2 + R^2}$

$= \sqrt{(10-6)^2 + 3^2}$

$= 5$ unit

Q.43 The potential difference V varies with time t as shown in the figure. The r.m.s. value of V is



(a) V_0 (b) $2V_0$

(c) $V_0/2$ (d) $V_0/\sqrt{2}$

Ans. [d]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Difficult**

*** Topic -Alternating Current**

Sol. $V_{rms} = \left\{\frac{1}{T}\int_0^{T/2} V_0^2\, dt\right\}^{1/2} = \left\{\frac{1}{T}\cdot V_0^2 \cdot \frac{T}{2}\right\}^{1/2}$

$= \frac{V_0}{\sqrt{2}}$

Q.44 If the ionization potential of hydrogen atom is 13.6 eV, its energy in the n = 3 is approximately-

(a) – 1.14 eV (b) –1.51 eV

(c) –3.4 eV (d) – 4.53 eV

Ans.[b]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Atomic Structure**

Sol. $E_1 = -13.6$ eV

$E_n = -13.6\,\frac{Z^2}{n^2}$

$\therefore E_3 = -13.6 \times \frac{1}{9} = -1.51$ eV

Q.45 The photoelectric work function of a metal is 3.3 eV. The threshold frequency for this metal is approximately -

(a) 3.3×10^{13} Hz (b) 8.0×10^{14} Hz

(c) 1.65×10^{15} Hz (d) 9.9×10^{15} Hz

Ans. [b]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Photo Electric Effect**

Sol. $W = h\nu_0$

$3.3 \times 1.6 \times 10^{-19} = 6.6 \times 10^{-34}\,\nu_0$

$\Rightarrow \nu_0 = 8 \times 10^{14}$ Hz

Q.46 A particle of mass 11×10^{-12} kg is moving with a velocity 6×10^{-7} m/s. Its de-Broglie wavelength is nearly -

(a) 10^{-20} m (b) 10^{-16} m

(c) 10^{-12} m (d) 10^{-8} m

Ans. [b]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -Matter waves**

Sol. $\lambda = \frac{h}{mv}$

$= \frac{6.6\times10^{-34}}{11\times10^{-12}\times6\times10^{-7}}$

$= 10^{-16}$ m

Q.47 The mass numbers of nuclei A and B are respectively 135 and 5. The ratio of their radii is-

(a) 1 : 3 (b) 3 : 1

(c) $\sqrt{27}$: 1 (d) 1 : $\sqrt{27}$

Ans. **[b]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Nuclear Physics**

Sol. $R \propto A^{1/3}$

$\frac{R_1}{R_2} = \left(\frac{135}{5}\right)^{1/3} = (27)^{1/3}$

$= 3 : 1$

Q.48 The resistance of a semiconductor and of a conductor -

(a) increases with temperature for both

(b) decreases with temperature for both

(c) increases and decreases respectively with temperature

(d) decreases and increases respectively with temperature

Ans.[d]

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Current Electricity**

Sol. $\alpha_{semiconductor}$ = – ve $\Rightarrow$ Temp. $\uparrow \Rightarrow R \downarrow$

$\alpha_{conductor}$ = + ve $\Rightarrow$ Temp. $\uparrow \Rightarrow R \uparrow$

Q.49 The truth table

A	B	Y
1	1	0
1	0	1
0	1	1
0	0	1

is of the

(a) NAND gate (b) OR gate

(c) NOT gate (d) AND gate

Ans. **[a]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Easy**

*** Topic -Logic Gates**

Sol. Logic of NAND gate - output is low when both inputs are high.

Q.50 The $\vec{E}$ and $\vec{B}$ vectors associated with an electromagnetic wave are -

(a) parallel to each other and are in the same phase

(b) parallel to each other and are opposite in phase

(c) perpendicular to each other and are opposite in phase

(d) perpendicular to each other and are in same phase

Ans. **[d]**

*** The similar question can be found in CP Class notes & CP Exercise sheet**

*** Average**

*** Topic -EMW**

Sol. In emw, E, B & direction of propagation are mutually perpendicular

E & B are in same phase.

Q.51 If the de-Broglie wavelength of the fourth Bohr orbit of hydrogen atom is 4Å, the circumference of the orbit will be -
(a) 4Å (b) 4 nm
(c) 14 Å (d) 16 nm

Ans. **[c]**

***The similar question can be found in CP class notes - Atomic Structure**

Sol. $*2\pi r = n\lambda$
circumference $= 4 \times 4$
$= 16$ Å

Q.52 The photo-electric work function depends upon the -
(a) Nature of metal
(b) Intensity of radiation
(c) Time of radiation
(d) Kinetic energy of photo-electron

Ans. **[a]**

***The same question can be found in CP class notes - Atomic Structure**

Sol. Factual

Q.53 The value of $n = 2$ and $l = 1$, the type of orbital would be -
(a) 2*s* (b) 2*p*
(c) 1*s* (d) 3*p*

Ans. **[b]**

***The similar question can be found in CP class notes and CP Ex. sheet Atomic Structure - Ex. # 3B, Q.2**

Sol. Factual

Q.54 The modern periodic table has been divided into -
(a) Seven periods : three short and four long
(b) Nine periods : six short and three long
(c) Eighteen periods : ten short and eight long
(d) Nine periods from zero to VIII

Ans. **[a]**

***The same question can be found in CP class notes**

Sol. Seven Periods ; three short period and four long period.

Q.55 Among K, K^+, Sr^{2+}, Ar, which atom/ion will have the smallest radius ?
(a) K^+ (b) Sr^{2+}
(c) Ar (d) K

Ans. **[b]**

***The same question can be found in CP class notes**

Sol. Sr^{2+} possesses smallest radii (118 pm)

Q.56 Which of the following is paramagnetic ?
(a) O_2^- (b) CN^-
(c) CO (d) NO^+

Ans. **[a]**

***The same question can be found in CP class notes and CP Ex. Sheet Chemical Bonding Ex. # 1, Q.113, P.No.144**

Sol. O_2^- (super oxide ion) is paramagnetic.

Q.57 The fusible mass obtained from high melting oxide in the gangue is called -
(a) Flux (b) Slag
(c) Matte (d) Matrix

Ans. **[b]**

***The similar question can be found in CP class notes and CP Ex. Sheet Metallurgy Ex. # 3, Q.17, P.No.159**

Sol. Slag is fusible mass obtained from high melting oxide in the gangue.

Q.58 The melting point of NaCl is high because -
(a) The distance between the ions is large
(b) Repulsion exists within NaCl lattice
(c) Lattice energy is high
(d) Size of sodium as well as chlorine is big

Ans. **[c]**

***The same question can be found in CP class notes and CP Ex. Sheet Chemical Bonding Ex. # 1, Q.28, P.No. 138**

Sol. Melting point of NaCl is high because lattice energy is high.

Q.59 The bond angle in water molecule is less than in ammonia molecule, due to the -
(a) presence of two lone pairs in H_2O molecule
(b) presence of three lone pairs in H_2O molecule
(c) presence of two lone pairs in NH_3 molecule
(d) high Electronegativity of oxygen atom

Ans. **[a]**

***The same question can be found in CP class notes**

Sol. Presence of two lone pair in water molecule while in ammonia there is only one lone pair, hence bond angle of H_2O (104.5) is less then NH_3(106.5).

Q.60 Aqueous solutions of lithium salts are not good conductors of electricity, because of -
(a) High hydration energy of $Li^{\oplus}$ ion
(b) High ionization energy of $Li^{\oplus}$ ion
(c) Small size of $Li^{\oplus}$ ion
(d) Non-metallic character of $Li^{\oplus}$ ion

Ans. **[a]**

***The similar question can be found in CP class notes and CP Ex. Sheet Chemical Bonding - Ex.1, Q.1, P.No.9**

Sol. Li^+ has high hydration energy there for size of hydrated $Li^+(aq)$ is large in aqueous solution and conductivity is less.

Q.61 For equation $2A + 2B \rightleftharpoons BA_2$, the equilibrium concentration of A, B, BA_2 is 4, 2 and 2 respectively. The value of K_c will be -
(a) 0.0625 (b) 0.625
(c) 6.280 (d) 6.250

Ans. **[a]**

***The similar question can be found in CP class notes and CP Ex. Sheet Chemical Equilibrium -Ex. # 1 Q.19**

Sol. $K_c = \dfrac{[BA_2]}{[A^2][B]} = \dfrac{2}{4\times4\times2}$

$K_c = \dfrac{1}{16} = 0.0625$

Q.62 Relationship between equilibrium constant (K_c) and Gibbs energy (ΔG^{Θ}) at temperature T may be given by the expression -
(a) $\Delta G^{\Theta} = -K_c \log RT$
(b) $\Delta G^{\Theta} = -RT \log K_c$
(c) $\Delta G^{\Theta} = -\dfrac{\log RT}{K_c}$
(d) $\Delta G^{\Theta} = -\log\dfrac{K_c}{RT}$

Ans. **[b]**

***The same question can be found in CP class notes and CP Ex. Sheet Thermodynamics - Ex. # 3A Q.17**

Sol. $\Delta G^o = -RT \log_e K_c$

Q.63 Given that for HA acid, $K_a = 10^{-6}$ and for MOH base $K_b = 10^{-6}$. The pH of 0.1 M MA salt solution will be -
(a) 5 (b) 7
(c) 9 (d) 2

Ans. **[b]**

***The same question can be found in CP class notes - Ionic Equilibrium**

Sol. $pH = 7 + \dfrac{1}{2}\,pK_a - \dfrac{1}{2}\,pK_b$ $\quad \because K_a = K_b$

$pH = 7$

Q.64 The pH of an aqueous solution of a 1×10^{-7} M solution of HCl will be -
(a) 7
(b) slightly less than 7
(c) slightly greater than 7
(d) 1

Ans. **[b]**

***The similar question can be found in CP class notes - Ionic Equilibrium**

Sol. $[H^+]_{total} = [H^+]_{acid} + [H^+]_{H_2O}$

$[H^+]_{total} = 10^{-7} + 10^{-7}$

$pH = 6.7$

Q.65 What will be the concentration of $H^{\oplus}$ ions in 0.1 M acetic acid and 0.1 M sodium acetate solution, if the dissociation constant of acetic acid is 1.8×10^{-5} ?
(a) 1.8×10^{-7} (b) 1.8×10^{-5}
(c) 1.8×10^{-2} (d) 1.8×10^{-3}

Ans. **[b]**

***The similar question can be found in CP class notes and CP Ex. Sheet Ionic equilibrium - Ex. # 3B Q.21**

Sol. $pH = pK_a + \log \frac{[salt]}{[acid]}$

$[Salt] = [Acid]$

$pH = pK_a$

$[H^+] = K_a$

$= 1.8 \times 10^{-5}$

Q.66 A system absorbs reversibly 600 J of heat and performs 250 J of work. The increase in the internal energy of system is -

(a) 850 J (b) 250 J

(c) 600 J (d) 350 J

Ans. **[d]**

***The similar question can be found in CP class notes and CP Ex. Sheet Thermodynamics - Ex. # 1, Q.17**

Sol. $\Delta E = q + w$

$= 600 - 250$

$\Delta E = 350$ J

Q.67 For the reaction

$A + 2B \rightarrow$ Product,

the differential rate equation is -

(a) $-\frac{1}{2}\frac{d[A]}{dt} = \frac{-d[B]}{dt} = K[A][B]^2$

(b) $\frac{1}{2}\frac{d[A]}{dt} = \frac{d[B]}{dt} = K[A][B]^2$

(c) $\frac{-d[A]}{dt} = -\frac{1}{2}\frac{d[B]}{dt} = K[A]]B]^2$

(d) $\frac{dA}{dt} = \frac{1}{2}\frac{d[B]}{dt} = K[A][B]^2$

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet Chemical Kinetics - Ex. # 1, Q.66**

Sol. $A + 2B \longrightarrow$ Product

$\text{rate} = \frac{-d[A]}{dt} = -\frac{1}{2}\frac{d[B]}{dt} = K[A]\,[B]^2$

Q.68 For reversible melting of ice at 0ºC and 1 atm. pressure, the value of ΔG will be -

(a) < 0 (zero) (b) > 0 (zero)

(c) 0 (zero) (d) (∞) infinity

Ans. **[c]**

***The same question can be found in CP class notes - Thermodynamics**

Sol. At equilibrium

$\Delta G = 0$

Q.69 The $t_{1/2}$ of a reaction is halved as the initial concentration of the reactant is doubled. What is the order of reaction ?

(a) First order (b) Zero order

(c) Second order (d) Third order

Ans. **[c]**

***The similar question can be found in CP class notes - Chemical Kinetics**

Sol. For second order reaction

$t_{1/2} = \frac{1}{Ka}$

Q.70 Fog is a colloidal system of -

(a) gas in liquid (b) liquid in gas

(c) gas in gas (d) gas in solid

Ans. **[b]**

***The similar question can be found in CP class notes - Surface Chemistry**

Sol. Factual

Q.71 Semi-permeable membrane allows

(a) a solution to pass through it

(b) solute to pass through it

(c) solvent to pass through it

(d) both the solute and solvent to pass through it

Ans. **[c]**

***The same question can be found in CP class notes and CP Ex. Sheet Solution & colligative property Ex. # 1, Q.58**

Sol. Factual

Q.72 The molarity of a solution containing 5 g of NaOH in 450 ml solution will be -
(a) 0.189 mol dm^{-3} (b) 0.278 mol dm^{-3}
(c) 0.556 mol dm^{-3} (d) 0.027 mol dm^{-3}

Ans. **[b]**

***The similar question can be found in CP class notes and CP Ex. Sheet Solution & colligative property Ex. # 1, Q.7**

Sol. $M = \frac{5\times1000}{40\times450}$

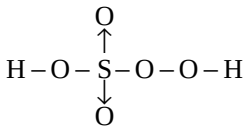
$= 0.278 \text{ mol/dm}^3$

Q.73 The oxidation state of sulphur in H_2SO_5 and of chromium in $K_2Cr_2O_7$ respectively is -
(a) 8, 6 (b) 4, 6
(c) 8, 8 (d) 6, 6

Ans. **[d]**

***The similar question can be found in CP class notes and CP Ex. Sheet Redox Ex. # 1, Q.10**

Sol.



Oxidation state of S = + 2 + 2 + 1 + 1

= + 6

$K_2Cr_2O_7 \Rightarrow +2 + 2x - 14 = 0$

x = + 6

Q.74 If the cell reaction is spontaneous, then -
(a) E^o = Θve (b) $\Delta G = \oplus$ ve
(c) e. m. f. = ⊕ve (d) $(\Delta G + E^o) = \oplus$ve

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet Electrochemistry - Ex. # 3B, Q.22**

Sol. Factual

Q.75 For the Zn-Cu cell, E^o = 1.10 V. If the reduction potential of Cu^{2+}(aq) | Cu(s) couple is 0.34 V, then the reduction potential of Zn^{2+}(aq.) | Zn(s) couple will be
(a) – 0.76 V (b) 0.76 V
(c) 7.6 V (d) 0.38 V

Ans. **[a]**

***The similar question can be found in CP class notes and CP Ex. Sheet Electrochemistry - Ex. # 3A, Q.11**

Sol. $E^o_{cell} = E^o_{cathode} - E^o_{anode}$

$1.1 = 0.34 - E^o_{Zn^{+2}/Zn}$

$E^o_{Zn^{+2}/Zn} = -0.76$ V

Q.76 An example of a cyclic silicate is -
(a) Beryl (b) Zeolite
(c) Talc (d) Feldspar

Ans. **[a]**

***The same question can be found in CP class notes**

Sol. Beryl ; $(Be_3Al_2\ Si_6\ O_{18})$ is example of cyclic silicate.

Q.77 Which halide is unknown ?
(a) Tl(III) iodide (b) In(III) bromide
(c) Ga(III) fluoride (d) B(III) chloride

Ans. **[a]**

***The same question can be found in CP class notes**

Sol. Tℓ(III) iodide do not due to inert pair effect and Tl^{+3} is good O.A. while Tl^+ is good R.A.

Q.78 Colourless ion-pair is -
(a) Cu^+, Zn^{2+} (b) Cu^{2+}, Zn^{2+}
(c) V^{3+}, Cr^{3+} (d) Mn^{3+}, Fe^{3+}

Ans. **[a]**

***The similar question can be found in CP class notes and CP Ex. Sheet d & f - block elements - Ex. # 11B, P.No.115**

Sol. Cu^+, Zn^{2+} both have (d^{10}) configuration and hence are colourless.

Q.79 Similar sizes of second and third transition elements can be explained on the basis of -
(a) Inert-pair effect
(b) Screening effect
(c) Lanthanide contraction
(d) Increasing effective nuclear charge

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet d & f - block elements - Ex. # 11A, Q.96, P.No.107**

Sol. Due to Lanthanide contraction, sizes of second and third transition elements are same.

Q.80 A transition metal complex adopts $t_{2g}^4 eg^2$ configuration. The nature of ligand surrounding the ion is -

(a) Strong field (b) Weak field

(c) Neutral (d) ⊕ve field

Ans. **[b]**

***The same question can be found in CP class notes**

Sol. $t_{2g}^4 eg^2$ is configuration of weak of field ligand.

Q.81 Ether and benzene can be separated by -

(a) Filtration (b) Distillation

(c) Crystallization (d) Sublimation

Ans. **[b]**

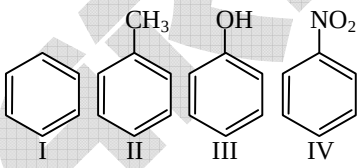
***The similar question can be found in CP class notes and CP Ex. Sheet Oxygen Compounds**

Sol. Ether Boiling point = 34.5° C

Benzene boiling point = 80°C

Both can be separated by Distillation

Q.82 Consider the following compounds :



Correct order of their reactivity in electrophilic substitution reactions would be

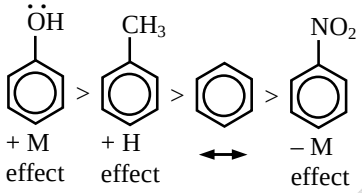
(a) I > II > III > IV (b) IV > III > II > I

(c) III > II > I > IV (d) III > IV > I > III

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet GOC-II**

Sol. E.S.R $\propto$ e^- density on benzene ring $\propto \frac{+M}{-M} \propto \frac{+H}{-H} \propto \frac{+I}{-I}$



Q.83 Ozonolysis of a hydrocarbon gives one mole of acetone and one mole of formaldehyde. The hydrocarbon is -

(a) Propene

(b) 2-methylpropene

(c) 2-methyl-2-butene

(d) 2-methyl-1-butene

Ans. **[b]**

***The similar question can be found in CP class notes and CP Ex. Sheet Hydrocarbon**

Sol. $CH_3–C(CH_3)=CH_2 \xrightarrow{O_3/H_2O/Zn} CH_3–C(CH_3)=O + O=CH_2$

(2-methyl propene)

Q.84 In the free-radical halogenation of alkanes, chain propagating step is -

(a) $Cl_2 \xrightarrow{h\nu} 2Cl^\bullet$

(b) $CH_4 + Cl^\bullet \rightarrow CH_3Cl + H^\bullet$

(c) $CH_4 + Cl^\bullet \rightarrow CH_3^\bullet + HCl$

(d) $CH_3^\bullet + Cl^\bullet \rightarrow CH_3Cl$

Ans. **[c]**

***The similar question can be found in CP class notes**

Sol. Initiation $C\ell–C\ell \xrightarrow{h\nu} C\dot{\ell} + C\dot{\ell}$

Propagation $H_3C–H + C\dot{\ell} \longrightarrow \dot{C}H_3 + HC\ell$

Termination $\dot{C}H_3 + \dot{C}H_3 \longrightarrow CH_3–CH_3$

Q.85 Correct IUPAC name is -
(a) 3-methyl-2-ethylpentane
(b) 2-ethyl-3-methylpentane
(c) 3-ethyl-2-methylpentane
(d) 2-ethyl-2-methylpentane

Ans. **[c]**

***The similar question can be found in CP class notes**

Sol. (1) (2) (3) (4) (5)

CH_3–CH(–CH_3)–CH(–C_2H_5)–CH_2–CH_3

3-ethyl-2-methyl pentane

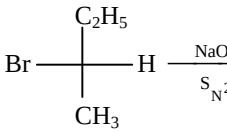
Q.86 By heating which mixture, propane nitrile will be obtained ?
(a) Ethyl alcohol + KCN
(b) Propyl alcohol + KCN
(c) Ethyl chloride + KCN
(d) Propyl chloride + KCN

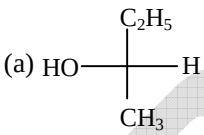
Ans. **[c]**

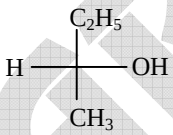
***The similar question can be found in CP class notes and CP Ex. Sheet Halo-alkane**

Sol. $CH_3CH_2–C\ell + KCN \longrightarrow CH_3CH_2–CN + KC\ell$

Ethyl chloride → Propane Nitrile

Q.87  'A'; A is -

(a) 

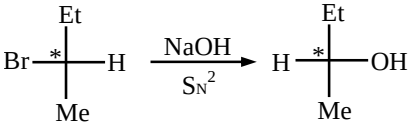
(b) 

(c) 1 : 1 mixture of both (a) and (b)
(d) CH_3–CH=CH–CH_3

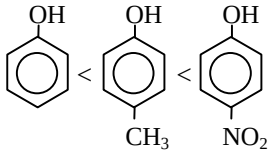
Ans. **[b]**

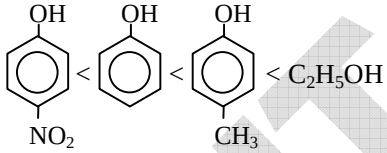
***The similar question can be found in CP class notes**

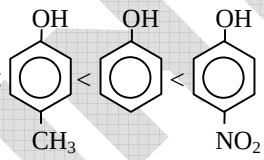
Sol. S_N2 reaction involve Walden's inversion.

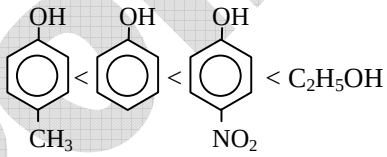


Q.88 Correct increasing order of acidity of the following phenols is -

(a) $C_2H_5OH <$ 

(b) 

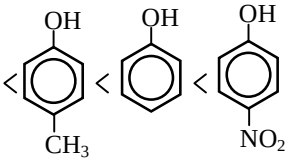
(c) $C_2H_5OH <$ 

(d) 

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet GOC-II**

Sol. $\text{Acidic strength} \propto \frac{-M}{+M} \propto \frac{-I}{+I}$

$CH_3CH_2–OH <$ 

Q.89 p, s and t-alcohols can be distinguished by -
(a) Reimer-Tiemann reaction
(b) Tollen's reagent
(c) Lucas test
(d) Lassaigne's test

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet Alcohol**

Sol. $\left.\begin{array}{l} 1° \text{ alcohol} \longrightarrow \text{Red} \\ 2° \text{ alcohol} \longrightarrow \text{blue} \\ 3° \text{ alcohol} \longrightarrow \text{Colourless} \end{array}\right\}$ Luca's Test

Q.90 Major product of the reaction

$(CH_3)_3C - Cl + C_2H_5ONa \longrightarrow$

would be -

(a) $(CH_3)_2C–OC_2H_5$

(b) $(CH_3)_3C–C_2H_5$

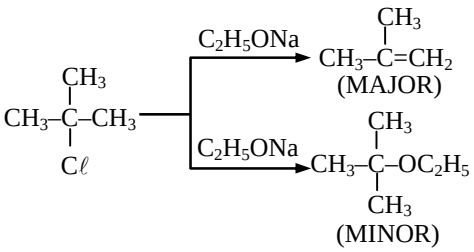
(c) $(CH_3)_2C = CH_2$

(d) $CH_3–CH=CH–C_2H_5$

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet Halo-alkane**

Sol. 3°-halide shows elimination with strong reagent



Q.91 Which of the following compounds would exhibit highest dipole moment ?

(a) Ethers

(b) Alcohol

(c) Carbonyl compounds

(d) Carboxylic acids

Ans. **[c]**

***The similar question can be found in CP class notes**

Sol. Carbonyl compounds have more dipole moment as compare to the carboxylic acids and alcohol.

Q.92 Ketones can be prepared by -

(a) Rosenmund reduction

(b) Etard reaction

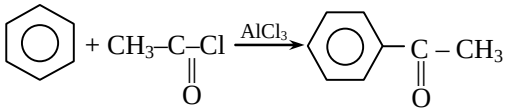
(c) Cannizzaro reaction

(d) Friedel-Craft reaction

Ans. **[d]**

***The similar question can be found in CP class notes**

Sol.



Friedel craft reaction

Q.93 Biuret test is characteristic of compounds containing the functional group -

(a) > C = O (b) $– NH_2$

(c) –CONH– (d) $–C \equiv N$

Ans. **[c]**

***The similar question can be found in CP class notes and CP Ex. Sheet Oxygen Compounds**

Sol. Biuret test is used for

$–\underset{\underset{O}{\|}}{C}–NH–$ (amide) group

Q.94 When propanoic acid is treated with aqueous sodium bicarbonate CO is liberated. The C of CO_2 comes from -

(a) methyl group

(b) carboxylic acid group

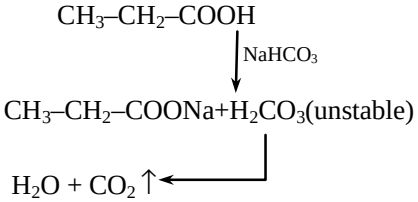
(c) methylene group

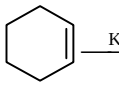
(d) bicarbonate

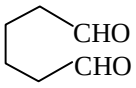
Ans. **[d]**

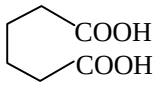
***The similar question can be found in CP class notes**

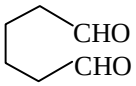
Sol.



Q.95  $\xrightarrow[\Delta]{KMnO_4-H_2SO_4}$ 'P', the product P is -

(a) 

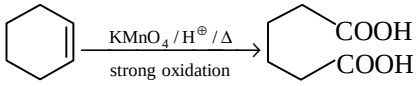
(b) 

(c) 

(d) 

Ans. **[b]**

***The similar question can be found in CP class notes**

Sol. 

Q.96 Benzene diazonium chloride on treatment with ethanol gives -

(a) Chlorobenzene (b) benzene

(c) phenol (d) aniline

Ans. **[B]**

***The similar question can be found in CP class notes**

Sol.

Q.97 $C_2H_5Cl \xrightarrow{NH_3}$ 'A' $\xrightarrow{C_2H_5Cl}$ 'B' $\xrightarrow{C_2H_5Cl}$ 'C'

A, B and C respectively are -

(a) $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$

(b) $C_2H_5NH_2$, $C_2H_5NH–Cl$, $C_2H_5–NCl_2$

(c) $C_2H_5NH_2$, $CH_2=CH_2$, $Cl–CH_2–CH_2–C_2H_5$

(d) $C_2H_5NH_2$, $(C_2H_5)_3N$, $(C_2H_5)_2NH$

Ans. **[A]**

***The similar question can be found in CP class notes**

Sol. $C_2H_5–Cl \xrightarrow[(-HCl)]{NH_3} C_2H_5–NH_2 \xrightarrow[(-HCl)]{C_2H_5–Cl}$

(A)

$C_2H_5–NH–C_2H_5 \xrightarrow[(-HCl)]{C_2H_5Cl} (C_2H_5)_3N$

(B) (C)

Q.98 Heating a mixture of a primary alkyl amine and chloroform with ethanolic potassium hydroxide gives

(a) alkyl chloride (b) alkyl alcohol

(c) alkyl isocyanide (d) alkene

Ans. **[C]**

***The similar question can be found in CP class notes**

Sol. Hoffmann's isocyamide test

$R–NH_2 \xrightarrow{CHCl_3+alc.KOH} R–N \equiv C$

Q.99 Weakest intermolecular forces are present in

(a) Neoprene (b) Terylene

(c) polystyrene (d) Bakelite

Ans. **[A]**

***The similar question can be found in CP class notes and C.P. Ex. Sheet - Biomolecules**

Sol. It is a fact

Q.100 Which among the following is a tranquilizer ?

(a) Eqvanil (b) promethazine

(c) Omeprazole (d) Cimetidine

Ans. **[a]**

***The similar question can be found in CP class notes and C.P. Ex. Sheet - Chemistry in everyday life**

Sol. It is a fact

Q.101 Which was absent in the atmosphere at the time of origin of life ?
(a) NH_3 (b) H_2 (c) O_3 (d) CH_4
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Origin of life & Organic evolution (Q.1 page.74, Q.1 page 91, Q.54 page 105)**

Q.102 Organic compounds first evolved in earth required for origin of life were
(a) Urea and Amino acid
(b) Proteins and Nucleic acid
(c) Proteins and Amino acids
(d) Urea and Nuclear acid
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Origin of life & Organic evolution (Theory page 5, Q.5 page 74)**

Q.103 Homologous organs indicate the
(a) Convergent evolution
(b) Parallel evolution
(c) Common descendent
(d) Natural selection
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Origin of life & Organic evolution (Page No.27)**

Q.104 The first organism to be found on a bare rock is
(a) Moss (b) Alga
(c) Lichen (d) Fern
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Plant Diversity (Lower Plant) page no. 95 and Ecology chapter - II population, community Page No. 58, Ex.I. Q.No. 94**

Q.105 The phrase 'Omnis cellula e cellula' as given by -
(a) Virchow (b) Pasteur
(c) Schleiden (d) Brown
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Cell biology**

Q.106 Starfish belongs to the class -
(a) pisces (b) cephalopoda
(c) asteroidea (d) ophiuroidea
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity (page no. 49)**

Q.107 Which of the following is *not* an insect ?
(a) Ant (b) Mosquito
(c) Spider (d) Locusts
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity (page no. 42; Q.44 page no. 84)**

Q.108 The canal system is characteristic feature of -
(a) sponges (b) helminthes
(c) echinoderms (d) coelenterates
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity Page No. 11(Q.80 page no. 56; Q.99 page no. 58)**

Q.109 In protozoa, like Amoeba and Paramecium, the organ found for osmoregulation is -
(a) nucleus (b) food vacuole
(c) mitochondria (d) contractile vacuole
Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity (page no. 8; Q.16 page no. 53)**

Q.110 Which of the following organisms is pseudocoelomate ?
(a) Hookworm (b) Liver fluke
(c) Jelly fish (d) Leech
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity page no. 30**

Q.111 Mammal's heart is -
(a) myogenic (b) neurogenic
(c) voluntary (d) sympathetic
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Circulatory System Page No. 11**

Q.112 Natural parthenogenesis is found in-
(a) Housefly (b) Honey bee
(c) Drosophila (d) All of these
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Embryology, Page No. 18**

Q.113 Which of the following snakes is nonpoisonous ?
(a) Cobra (b) Krait
(c) Viper (d) Python
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity page no. 28 (Q.110 page 74)**

Q.114 A group of animals having marsupium is -
(a) monotremata (b) eutheria
(c) metatheria (d) pantotheria
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity page no. 40 (Q.67 page 71; Q.117 page 74)**

Q.115 Which of the following belongs to Phylum Arthropoda
(a) Star fish (b) Gold fish
(c) Silver fish (d) Cuttle fish
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity page no. 37 (Q.77 page 71)**

Q.116 Browzing by animals is an example of
(a) Parasitism (b) Predation
(c) Commensalism (d) Ferns
Ans. [b]
*** The same question can be found in CP class notes & CP Sheet – Ecology chapter - II population, community Page No. 62**

Q.117 Intermediate community between Pioneer and Climax communities is called
(a) Seral community
(b) Biotic community
(c) Temporary community
(d) Ecosere
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Ecology chapter - II population, community, Page No. 53, Ex.I, Q.No. 111**

Q.118 In parasitic food chain, the pyramid of number is
(a) Inverted
(b) Upright
(c) Linear
(d) Upright and inverted
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Ecology chapter - III Ecosystem, Page No. 94**

Q.119 Ten percent law of energy transfer in a food chain is given by
(a) Schimper (b) Elton
(c) Haeckel (d) Lindemann
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Ecology - chapter ecosystem, Page No. 95**

Q.120 In a food chain the largest population is that of
(a) Producers
(b) Decomposers
(c) Secondary consumers
(d) Primary consumers
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Ecology chapter – ecosystem, Page No. 92**

Q.121 Initiation codon is
(a) AUG (b) AGU
(c) AAU (d) AUA
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Protoplasm (Chain initiation) Page No. 42**

Q.122 Apoenzyme is
(a) protein (b) carbohydrate
(c) vitamin (d) amino acid
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Plant physiology chapter – enzymes, Page No. 114**

Q.123 Which amino acids are present in histones ?
(a) Lysine and Histidine
(b) Valine and Histidine
(c) Arginine and Lysine
(d) Arginine and Histidine
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Cell biology and protoplasm, Page No. 143 (Hindi sheet)**

Q.124 Glycogenolysis involes
(a) conversion of sugar into glycongen
(b) oxidation of sugar
(c) conversion of glycogen into sugar
(d) conversion of glycogen into fat
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Plant physiology chapter - cell respiration, Class Notes**

Q.125 The two strands of the DNA double helix are held together by
(a) hydrogen bonds
(b) hydrophobic bonds
(c) peptide bonds
(d) phosphodiester bonds
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Protoplasm (DNA) Page No. 24**

Q.126 A polygenic inheritance in human beings is
(a) skin colour
(b) sickle cell anaemia
(c) colour blindness
(d) phenylketonuria
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Genetics (Polygenic inheritance) Page No. 22**

Q.127 A woman with albinic father marries an albinic man. The proportion of her progeny is
(a) 2 normal : 1 albinic
(b) All normal
(c) All albinic
(d) 1 normal : 1 albinic
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Genetics (Exercise-3) Page No. 78**

Q.128 A cross between pure tall pea plant with green pods and dwarf pea with yellow pods will produce tall F_2 plants, out of 16
(a) 15 (b) 13
(c) 12 (d) 7
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Genetics (Dihybrid cross) Page No. 9**

Q.129 Dihybrid cross is related to the principle of
(a) dominance
(b) segregation
(c) independent assortment
(d) purity of gametes
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Genetics (Dihybrid cross) Page No. 9**

Q.130 Emasculation is related to
(a) Pure line (b) Mass selection
(c) Clonal selection (d) Hybridisation
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Genetics (Technique of Mendel)) Page No. 5 and Plant reproduction and Economic Botany, Page No. 91**

Q.131 Which sound producing organ is found in birds ?
(a) Pharynx (b) Larynx
(c) Syrinx (d) Trachea
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Animal Diversity page no. 31**

Q.132 During expiration, the diaphragm becomes
(a) Normal
(b) Flattened
(c) Dome-shaped
(d) Oblique
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Respiratory System Page No. 9**

Q.133 Serum is
(a) Blood without fibrinogen
(b) Lymph without corpuscles
(c) Blood without corpuscles and fibrinogen
(d) Lymph
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Animal Tissue, page no. 52**

Q.134 In a healthy adult man the normal diastolic pressure is
(a) 90 m Hg (b) 120 mm Hg
(c) 80 mm Hg (d) 100 mm Hg

Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet - Circulatory System**

Q.135 The joint of Radio-ulna with the upper arm is
(a) hinge joint (b) pivot joint
(c) socket joint (d) None of these
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Skeletal System, Page No.17**

Q.136 Sertoli cells are founding in
(a) heart
(b) liver
(c) germinal epithelium
(d) seminiferous tubules
Ans. **[c,d]**
*** The same question can be found in CP class notes & CP Sheet – Reproductive System, Page No. 8**

Q.137 At the time of implantation, the human embryo is called
(a) embryo (b) blastocyst
(c) zygote (d) foetus
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Embryology, Page No.35**

Q.138 The endometrium is the lining of
(a) bladder (b) vagina
(c) uterus (d) oviduct
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Reproductive System, page no. 12**

Q.139 ZIFT is
(a) Transfer of zygote into the fallopian tube
(b) Transfer of embryo into the uterus
(c) Transfer of mixture of sperms and ova into the fallopian tube
(d) Transfer of mixture of sperms and ova into the uterus

Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Reproductive Health**

Q.140 Fusion of dissimilar gametes is known as
(a) Fertilization (b) Dichogamy
(c) Autogamy (d) Allogamy
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction and Economic Botany, Page No. 31**

Q.141 The process of translation is
(a) DNA synthesis (b) RNA synthesis
(c) Protein synthesis (d) Ribosome synthesis
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Protoplasm (Translation) Page No. 36**

Q.142 The codon for anticodon 3'UUUA-5' is
(a) 3'AAAU-5' (b) 5'UAAA-3'
(c) 5'AAAU-3' (d) 3'UAAU-5'
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Protoplasm (Genetic code) Page No. 38**

Q.143 A kind of Biotechnology involving manipulation of DNA is
(a) DNA replication (b) Genetic engineering
(c) Denaturation (d) Renaturation
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Biotechnology, Page No. 11**

Q.144 What is *true* of plasmid ?
(a) Found in viruses
(b) Contains genes for vital activities
(c) Part of nuclear chromosome
(d) Widely used in gene transfer
Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Genetics (plasmid) Page No. 43 and (Plant diversity – Bacteria) Page No. 33**

Q.145 DNA fingerprinting technique was discovered by
(a) Wilmut (b) A. Jeffreys
(c) Ethoven (d) Kary Mullis
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Genetics (DNA Test) Page No. 48**

Q.146 The term Vaccine was introduced by
(a) Jenner
(b) Koch
(c) Pasteur
(d) Jointly by Koch and Pasteur

Ans. **[a]**

*** The same question can be found in CP class notes & CP Sheet – Immunity & disease (Vaccine) Page No. 123**

Q.147 The immune system is made of
(a) Humoral system
(b) Humoral and Cell mediated systems
(c) Humoral and Fibrous systems
(d) Antigen induced antibodies

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Immunity & disease (Immune System) Page No. 120**

Q.148 Minamata disease is caused due to presence of……in water.
(a) Cadmium (b) Lead
(c) Arsenic (d) Mercury

Ans. **[d]**

*** The same question can be found in CP class notes & CP Sheet – Immunity & disease (Exercise-III) Page No. 178 and Ecology Chapter - V Pollution, Ex. II, Q.No. 17**

Q.149 Amniocentesis detects
(a) Deformity in brain (b) Deformity in heart
(c) Hereditary disease (d) All of these

Ans. **[d]**

*** The same question can be found in CP class notes & CP Sheet – Embryology**

Q.150 Metastasis is associated with
(a) Malignant tumours
(b) Benign tumours
(c) Both Malignant and Benign tumours
(d) Crown gall tumour

Ans. **[a]**

*** The same question can be found in CP class notes & CP Sheet**

Q.151 In Five-kingdom classification, Euglena is placed in
(a) Monera (b) Protista
(c) Fungi (d) Animalia

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity**

Q.152 Nucleic acid is absent in
(a) Virus (b) Viroid
(c) Prion (d) Mycoplasma

Ans. **[c]**

*** The same question can be found in CP class notes & CP Sheet – Virus & Mycoplasma (Virus) and Mycoplasma-Virus (Plant Diversity)**

Q.153 In most fungi, cell wall is chiefly made up of
(a) Cellulose (b) Chitin
(c) Protein (d) Lipid

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity Page No. 79**

Q.154 Sporophyte is not an independent generation in
(a) Bryophytes (b) Pteridophytes
(c) Gymnosperms (d) Angiosperms

Ans. **[a]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity Page No. 123**

Q.155 Both, pteridophytes and gymnosperms have
(a) Seeds
(b) Independent gametophytes
(c) Archegonia
(d) Ovules

Ans. **[c]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity Page No. 147**

Q.156 Heterocysts are present in
(a) Riccia (b) Ulothrix
(c) Albugo (d) Nostoc

Ans. **[d]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity-(Cynobacteria) Page No. 50**

Q.157 In Albugo, sexual reproduction results in the formation of
(a) Zygospore (b) Oospore
(c) Basidiospore (d) Teliospore

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity (Lower Plant-Albugo) Page No. 75**

Q.158 Double-fertilisation occurs in
(a) *Riccia* (b) *Pteridium*
(c) *Cycas* (d) *Capsella*
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction and Economic botany, Page No. 91**

Q.159 Velamen is present in roots of
(a) *Vanda* (b) *Rhizophora*
(c) *Asparagus* (d) Maize
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Plant Anatomy Q.89 Page 53 and Ecology Chapter - I organism environment, Page No. 29**

Q.160 In Ruscus, the stem is a
(a) Phyllode (b) Cladode
(c) Offset (d) Sucker
Ans. [b]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 74**

Q.161 In turmeric, stem is a
(a) tuber (b) Bulb
(c) Rhizome (d) Corm
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 8**

Q.162 Catkin inflorescence is found in
(a) Wheat (b) Oat
(c) Mulberry (d) Fig
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 17**

Q.163 A racemose type of inflorescence with its main axis almost flat is called
(a) Corymb (b) Umbel
(c) Spike (d) Capitulum
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 18**

Q.164 Epigynous flowers are present in
(a) Mustard (b) Brinjal
(c) China rose (d) Cucumber
Ans. [d]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology, BHU Main Take Home Q. 136 (dt. 10-5-11)**

Q.165 A small, dry, one-seeded fruit with its pericarp fused with the seed-coat, developing from a monocarpellary gynoecium is called
(a) Cypsela (b) Siliqua
(c) Caryopsis (d) Samara
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 32**

Q.166 Spathe is present in the flowers of
(a) Banana (b) Rice
(c) Marigold (d) Sunflower
Ans. [a]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 20**

Q.167 In Dianthus, placentation is
(a) Basal (b) Free central
(c) Axile (d) Marginal
Ans. [b]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 28**

Q.168 Ovary is half-inferior in the flower of
(a) Apple (b) Guava
(c) Peach (d) Garlic
Ans. [c]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Q. 80, Page 50**

Q.169 The term "Keel" is used for special type of
(a) Sepals
(b) Petals
(c) Stamens
(d) Carpels
Ans. [b]
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 24**

Q.170 Polyadelphous stamens are found in
(a) Cotton (b) Sunflower
(c) Gram (d) Lemon

Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant morphology, Nurture I, Semi Major II, Q. 138 (dt. 6-2-11)**

Q.171 Replum is the characteristic feature of the ovary of
(a) Asteraceae (b) Brassicaceae
(c) Malvaceae (d) Liliaceae

Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Plant morphology Q. 86, Page 96**

Q.172 Coffee and Quinine are obtained from the plants of
(a) Leguminosae (b) Asteraceae
(c) Rubiaceae (d) Poaceae

Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Plant morphology Q. 60, Page 89 and Plant reproduction and economic botany, Page NO. 112**

Q.173 Which of the following includes largest number of genera and species of plants ?
(a) Brassicaceae (b) Liliaceae
(c) Malvaceae (d) Asteraceae

Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant morphology and families of Angiosperm Page 86**

Q.174 Flowers are zygomorphic in
(a) Mustard (b) Radish
(c) Lily (d) Candytuft

Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant morphology, Nurture II, Semi Major II, Q. 140 (dt. 22-2-11)**

Q.175 An old trunk of shisham (Dalbergia sissoo) tree would possess maximum amount of
(a) Primary xylem
(b) Secondary xylem
(c) Primary phloem
(d) Secondary cortex

Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Plant Anatomy**

Q.176 Vascular bundles are arranged in a ring in stem of
(a) Wheat (b) Rice
(c) Gram (d) Maize

Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Plant Anatomy, Enthuse, Semi Major I, Q. 140 (dt. 15-1-11)**

Q.177 Kranz anatomy can be observed in leaves of
(a) Sorghum
(b) Spinach
(c) Mustard
(d) Tulip

Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology-I chapter photosynthesis, Page No. 18**

Q.178 In higher plants transport of food material occurs through
(a) Companion cells
(b) Sieve elements
(c) Tracheids
(d) Transfusion tissue

Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology - II chapter Plant water relation, Page No.**

Q.179 The term "Bark" refers to
(a) Phellem, Phelloderm and vascular cambium
(b) Periderm and Secondary xylem
(c) Cork cambium and Cork
(d) Phellogen, Phellem, Phelloderm and Secondary phloem

Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant Anatomy, AIPMT Main Test paper (dt. 23-1-2011)**

Q.180 In angiosperms, female gametophyte is represented by
(a) Ovule
(b) Nucellus
(c) Megaspore mother cell
(d) Embryo sac

Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction and economic botany, Page No. 20, Ex. I, Q.No. 45**

Q.181 Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called
(a) Geitonogamy (b) Autogamy
(c) Karyogamy (d) Xenogamy
Ans. **[a]** (
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction and economic botany, Page No. 23, Ex. II, Q.No. 137**

Q.182 Development of embryo from nucellar cells is common in many varieties of
(a) Citrus (b) Sunflower
(c) Oat (d) Marigold
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction and economic botany, Page No. 39**

Q.183 Endosperm is not completely consumed during embryo development in seeds of
(a) Gram (b) Pea
(c) Bean (d) Castor
Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction & economic botany, Page No. 42**

Q.184 Developing pollen grains in micro-sporangium get their nourishment from
(a) Epidermis (b) Endothecium
(c) Middle layer (d) Tapetum
Ans. **[d]**
*** The same question can be found in CP class notes & CP Sheet – Plant reproduction & economic botany, Page No. 7**

Q.185 Light reaction in stroma lamellae of the chloroplast results in the formation of -
(a) $NADPH_2$ (b) ATP + $NADPH_2$
(c) ATP (d) O_2
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology chapter photosynthesis , Page No. 11**

Q.186 One of the commonly used plant growth hormone in tea plantations is -
(a) ABA (b) Zeatin
(c) IAA (d) Ethylene
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology - Chapter- Plant growth hormones, Ex. I , Q.No. 256**

Q.187 Leghaemoglobin in root nodules of legumes
(a) protects nitrogenase
(b) converts N_2 to NH_3
(c) oxidises NO_2 to NO_3
(d) helps in development of infection threads
Ans. **[a]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology - chapter - mineral nutrition , N_2 metabolism, Page No. 209**

Q.188 The chief sinks for the mineral elements are -
(a) Senescent leaves (b) Ripe fruits
(c) Lateral meristems (d) Bark
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology - chapter mineral nutrition, Page No. 203**

Q.189 In leaves of C_4 plants malic acid synthesis during CO_2 fixation occurs in -
(a) Bundle sheath (b) Mesophyll
(c) Epidermis (d) Guard cells
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Plant physiology - Chapter – photosynthesis, Page No. 19**

Q.190 Which of the following helps in maintenance of cell shape ?
(a) Plasmalemma
(b) Endoplasmic reticulum
(c) Cytoskeleton
(d) Mesosome
Ans. **[c]**
*** The same question can be found in CP class notes & CP Sheet – Cell Biology**

Q.191 Membrane is absent in -
(a) Nucleus (b) Nucleolus
(c) Vacuole (d) Lysosome
Ans. **[b]**
*** The same question can be found in CP class notes & CP Sheet – Cell Biology**

Q.192 A suitable vector for gene cloning in higher organism is -
(a) Baculovirus
(b) Retrovirus
(c) Salmonella typhimurium
(d) Neurospora crassa

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Genetics (Gene Therapy) Page 48**

Q.193 Nucleic acid segment tagged with a radio-active molecule is called
(a) Clone (b) Probe
(c) Plasmid (d) Vector

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Genetics (DNA test) page No. 50**

Q.194 GM brinjal in India has been developed for resistance against
(a) Virus (b) Bacteria
(c) Fungi (d) Insects

Ans. **[d]**

*** The same question can be found in CP class notes & CP Sheet – Biotechnology, Page No. 17**

Q.195 The drug Cyclosporin used for organ-transplant patients is obtained from a
(a) Bacterium (b) Fungus
(c) Virus (d) Plant

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – – Biotechnology, Page No. 7**

Q.196 A common biocontrol agent for the control of plant diseases caused by fungi is
(a) *Agrobacterium* (b) *Glomus*
(c) *Trichoderma* (d) Baculovirus

Ans. **[c]**

*** The same question can be found in CP class notes & CP Sheet – Biotechnology, Page No. 17**

Q.197 Powdery mildew of wheat is caused by a species of
(a) *Puccinia* (b) *Erysiphe*
(c) *Ustilago* (d) *Albugo*

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity (Kingdom Fungi) Page no. 92**

Q.198 In paddy fields biological nitrogen fixation is chiefly brought by
(a) Cyanobacteria (b) Green algae
(c) Mycorrhiza (d) *Rhizobium*

Ans. **[a]**

*** The same question can be found in CP class notes & CP Sheet – Plant Diversity (Cynobacteria) Page no. 50 and Plant reproduction and economic botany, Page No. 107**

Q.199 An important drug is obtained from the bark of
(a) *Papaver* (b) *Cinchona*
(c) *Withania* (d) *Momordica*

Ans. **[b]**

*** The same question can be found in CP class notes & CP Sheet – Plant reproduction economic botany, Page No. 115**

Q.200 Germplasm conservation in-situ is done by
(a) Biosphere reserves
(b) Botanical gardens
(c) Germplasm banks
(d) Pollen banks

Ans. **[a]**

*** The same question can be found in CP class notes & CP Sheet – Ecology - chapter - IV Biodiversity, Page No. 139**