MHT CET FULL TEST-1
ANSWER KEY

PHYSICS

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

CHEMISTRY

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

SOLUTIONS

PHYSICS

Q.1 (C)
Electrons in an unbiased p-n junction, diffuse from n-region, i.e. higher electron concnetration to p-region i.e. low electron concentration region.

Q.2 (C)
They have same ω.
centripetal acceleration = $\omega^2 r$

$$\frac{a_1}{a_2} = \frac{\omega^2 r_1}{\omega^2 r_2} = \frac{r_1}{r_2}$$

Q.3 (A)
Method 1
Truth table can be formed as

A	B	Equivalent
0	0	0
0	1	1
1	0	1
1	1	1

Hence the Equivalent is "OR" gate

Q.4 (D)

Phase difference = $\frac{2\pi}{\lambda}$ × path difference

i.e $\quad \phi = \frac{2\pi}{\lambda} \times \frac{\lambda}{6} = \frac{\pi}{3}$

As $\quad I = I_{max} \cos^2\left(\frac{\phi}{2}\right)$

$$\frac{I}{I_{max}} = \cos^2\left(\frac{\phi}{2}\right)$$

$$\frac{I}{I_0} = \cos^2\left(\frac{\pi}{6}\right)$$

$$\frac{I}{I_0} = \frac{3}{4}$$

Q.5 (D)

$$v_{rms} = \sqrt{\frac{RT}{M}};$$

∴ $\quad (v_{rms})_{O2} = (v_{rms})_{H2}$

or $\quad \sqrt{\frac{273+47}{32}} = \sqrt{\frac{T}{2}}$

⇒ $\quad T = 20\ K$

Q.6 (D)
Acceleration due to gravity at leight h from earth surface.

$$g' = \frac{g}{\left(1+\frac{h}{R}\right)^2}$$

$$\frac{g}{9} = \frac{g}{\left(1+\frac{h}{R}\right)^2} \Rightarrow h = 2R$$

Q.7 (A)

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

$$\Rightarrow V = \sqrt{\frac{P}{\rho} + v^2}$$

Q.8 (A)

$i = i_0 \sin(\omega t + \phi)$

$\phi = 0$ as only resistance

$$\frac{i_0}{\sqrt{2}} = i_0 \sin(\omega t)$$

$$\omega t = \frac{\pi}{4}$$

$$t = \frac{\pi}{4\omega}$$

$$= \frac{\pi}{4 \times 2\pi \times 50} \times 1000\,\text{ms}$$

$= 2.5\,\text{ms}$

Q.9 (C)

$W_{P\to Q}|_{ext} = q(V_Q - V_P)$

$= -1.6 \times 10^{-19} \times 100\,(-4 - 10)$

$= 2.24 \times 10^{-16}\,\text{J}$

Q.10 (B)

In case of forced oscillations,

$$x = a\sin(\omega t + \phi) \text{ where } a = \frac{F_0 / m}{\omega_0^2 - \omega^2}$$

$$\therefore\ x \text{ is proportional to } \frac{1}{m(\omega_0^2 - \omega^2)}$$

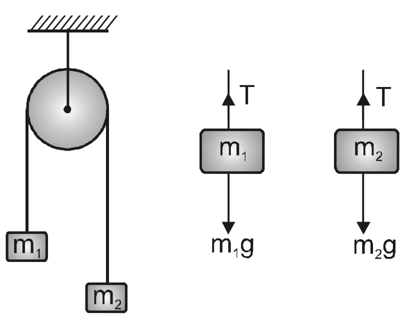
Q.11 (A)

$$I = \frac{10}{4} = \frac{5}{2}\,\text{A}$$

$$E = \frac{1}{2}Li^2 = \frac{1}{2} \times 2 \times \left(\frac{25}{4}\right) = 625 \times 10^{-2}\,\text{J}$$

Q.12 (A)

FBD of m_1 and m_2



$m_1 g - T = m_1 a$ ....(i)

$T - m_2 g = m_2 a$ ....(ii)

$$a = \frac{(m_1 - m_2)}{m_1 + m_2} g = \frac{(5 - 4.8)}{(5 + 4.8)} g$$

$$= \frac{0.2 \times 4.8}{9.8} = 0.2\,\text{m/s}^2$$

Q.13 (D)

Orbital velocity of electron

$$v \propto \frac{z}{n} \propto Z \quad (n = \text{same for both atoms})$$

$$\Rightarrow \frac{v_{He^+}}{v_H} = \frac{z_{He^+}}{z_H} = \frac{2}{1}$$

Q.14 (D)

$f_0 + f_e = L = 10\,\text{cm}$ ....(i)

$$\frac{f_0}{f_e} = 4 \Rightarrow f_0 = 4f_e$$

from equation (ii)

$4f_0 + f_0 = 10 \Rightarrow f_e = 2\text{cm} : L_1$ (eye piece)

$f_0 = 4 \times 2 = 8\,\text{cm} : L_4$ (Objective lens)

Q.15 (A)

$y = 5(\sin 3\pi t + \sqrt{3}\cos 3\pi t)$ cm

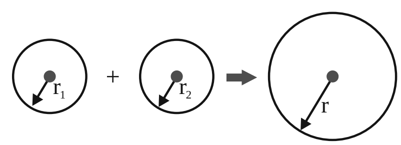
$\Rightarrow y = 10\sin(3\pi t + \phi)$

$\Rightarrow A = 10$ cm

$$\Rightarrow T = \frac{2}{3}\ \text{sec}$$

Q.16 (C)

By surface energy conservation



$\sigma A_1 + \sigma A_2 = \sigma A$

$\sigma[2 \times 4\pi r_1^2] + \sigma[2 \times 4\pi r_2^2] = \sigma[2 \times 4\pi r^2]$

$r_1^2 + r_2^2 = r^2$

$r = \sqrt{r_1^2 + r_2^2}$

Q.17 (B)

$\phi = BA\cos\omega t$

$\phi = BA\cos 2\pi f t$

$$\phi = \frac{B\pi r^2}{2}\cos 2\pi f t$$

$$e = -\frac{d\phi}{dt} = \frac{B\pi r^2}{2} . 2\pi f \sin 2\pi f t$$

$e = B\pi^2 r^2 f \sin 2\pi f t$

Peak value $= B\pi^2 r^2 f$

Q.18 (D)

At first COM moves in downward direction then shift back to initial position.

$\therefore$ time period at first increase then decreases.

Q.19 (A)

$$\frac{hc}{\lambda} = 5\,eV_0 + \phi$$

$$\frac{hc}{3\lambda} = eV_0 + \phi \Rightarrow \frac{2hc}{3\lambda} = 4e\,V_0 \Rightarrow \phi = \frac{hc}{6\lambda}$$

Q.20 (D)

$$B = \frac{\mu_0 i}{2R}$$

Also, $A = \pi R^2 \Rightarrow R = \sqrt{\frac{A}{\pi}}$

$$\Rightarrow B = \frac{\mu_0 i}{2\sqrt{\frac{A}{\pi}}} = \frac{\mu_0 i\sqrt{\pi}}{2\sqrt{A}} \Rightarrow i = \frac{2B}{\mu_0}\sqrt{\frac{A}{\pi}}$$

Q.21 (D)

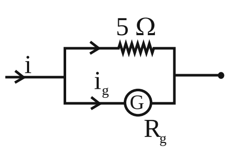
isochoric $\rightarrow$ Process d
isobaric $\rightarrow$ Process a
Adiabatic slope will be more than isothermal so
Isothermal $\rightarrow$ Process b
Adiabatic $\rightarrow$ Process c
order $\rightarrow$ d a b c

Q.22 (C)

i_g = 2% of current

$$= 2\times\frac{i}{100} = \frac{i}{50}$$

$$i_R = i - \frac{i}{50} = \frac{49}{50}i$$



$i_R\, 5 \Rightarrow i_g\, R_g$

$$R_g = \frac{\left(\frac{49}{50}\right)\times 5}{\frac{1}{50}}$$

R_g = 245 Ω

Q.23 (C)

We know that power consumed in a.c. circuit is given by

$P = E_{rms}.I_{rms}\cos\phi$

Here, $E = E_0 \sin \omega t$

$$I = I_0 \sin\left(\omega t - \frac{\pi}{2}\right)$$

This means the phase difference, is $\phi = \frac{\pi}{2}$

$$\because \cos\phi = \cos\frac{\pi}{2} = 0 \;\therefore\; P = E_{rms}.I_{rms}.\cos\frac{\pi}{2} = 0$$

Q.24 (B)

$$I = \frac{MR^2}{2} + 2\left(\frac{MR^2}{4} + MR^2\right)$$

$$= \frac{MR^2}{2} + \frac{MR^2}{2} + 2MR^2 = 3MR^2$$

Q.25 (A)

$\Delta\ell_1 = \Delta\ell_2$

$\ell\alpha_1\,\Delta T_1 = \ell\alpha_2\Delta T_2$

$$\frac{\alpha_1}{\alpha_2} = \frac{\Delta T_2}{\Delta T_1} \;;\; \frac{4}{3} = \frac{T-30}{180-30}$$

$T = 230^oC$

Q.26 (C)

Frequency of vibration of string, $f = \frac{1}{2l}\sqrt{\frac{T}{\mu}}$

Let say frequency of tuning fork is f_0

$$f_1 = \frac{\sqrt{144}}{2l\sqrt{\mu}} = \frac{12}{2l\sqrt{\mu}}$$

$$f_2 = \frac{\sqrt{169}}{2l\sqrt{\mu}} = \frac{13}{2l\sqrt{\mu}}$$

$$\frac{f_1}{f_2} = \frac{12}{13} \quad \text{(i)}$$

Given that,
$f_0 - f_1 = 6$ and $f_2 - f_0 = 6$
putting the value of f_1 and f_2 in equation (i)

$$\frac{f_0 - 6}{f_0 + 6} = \frac{12}{13}$$

$f_0 = 150$

Q.27 (B)

$E \propto \frac{1}{r}$ $\qquad$ $r \propto \frac{1}{m}$

$E \propto m$

$$\text{Ionization potential} = 13.6 \times \frac{(\text{Mass}_\mu)eV}{(\text{Mass}_e)}$$

$= 13.6 \times 207\text{ e V} = 2815.2\text{ eV}$

Q.28 (D)

$$\lambda = \frac{RT}{\sqrt{2}\pi d^2 N_A P} = \frac{KT}{\sqrt{2}\pi d^2 P}$$

(d = diameter of molecule)

λ =102 nm

Q.29 (B)

$$U_{Total} = \frac{kQq}{a} + \frac{kq^2}{a} + \frac{kQq}{a\sqrt{2}} = 0 \Rightarrow Q = \frac{-q}{\left(1+\frac{1}{\sqrt{2}}\right)}$$

Q.30 (C)

$\gamma = 1.5$

$P_1V_1^{\gamma} = P_2V_2^{\gamma}$

$(200)(1200)^{1.5} = P_2(300)^{1.5}$, $P_2 = 200[4]^{3/2} = 1600$ kPa

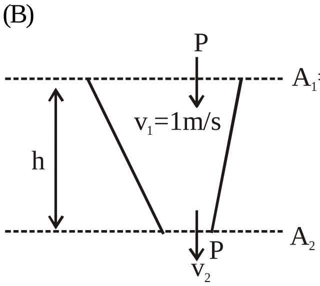
$$|W.D.| = \frac{P_2V_2 - P_1V_1}{\gamma - 1} = \left(\frac{480-240}{0.5}\right) = 480 \text{ J}$$

Q.31 (B)

Fringe width $= \frac{\lambda D}{d}$

As λ decreases, fringe width also decreases.

Q.32 (B)



$A_1v_1 = A_2v_2$

$10^{-4} \times 1 = A_2v_2$

$A_2v_2 = 10^{-4}$ ....(i)

$$P + \frac{1}{2}\rho(v_1^2 - v_2^2) + \rho gh = P$$

$$v_2^2 = v_1^2 + 2gh$$

$$v_2 = \sqrt{v_1^2 + 2gh} \qquad = \sqrt{1 + 2\times 10\times 0.15}$$

$$\frac{10^{-4}}{A_2} = 2$$

$A_2 = 5 \times 10^{-5}$ m^2

Q.33. (A)

10^{10} electrons enter in emitter, so the emitter current (I_E)

$$(I_E) = \frac{ne}{t} = \frac{10^{10}\times 1.6\times 10^{-19}}{10^{-6}} = 1.6 \text{ mA}$$

Base current $(I_B) = 0.04\,(I_E)$

Collector current $(I_C) = 0.96\,(I_E)$

$$\alpha = \frac{I_C}{I_E} = 0.96 \qquad \beta = \frac{I_B}{I_E} = \frac{0.96I_E}{0.04I_E} = 24$$

Q.34 (C)

$\because$ Beat frequency $= f_1 - f_2 = \delta$

$6 = f - 248$ ....(i)

$9 = 863 - f$ ....(ii)

(ii) – (i) $\Rightarrow 3 = 511 - 2f$

$2f = 508$

$f = 254$ Hz

Q.35 (A)

$F = m\omega^2 r$

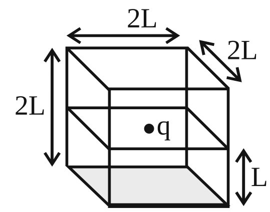
$$F = m\left(\frac{2\pi}{T}\right)^2 r$$

Taking square root both the side

$$\sqrt{F} = \frac{2\pi}{T}\sqrt{mr}$$

Q.36 (D)

$$\phi = \frac{Q/\varepsilon_0}{6}$$



Flux passing through shaded face $= \frac{q}{6\varepsilon_0}$

Q.37 (D)

$V = \frac{ds}{dt}$ = slope of the displacement - time graph.

Q.38 (C)

magnetic field at center of loop

$$B_1 = \frac{\mu_0 i}{2R}$$

Magnetic field at $x = \sqrt{3}R$

$$B_2 = \frac{\mu_0 iR^2}{2(R^2 + x^2)^{3/2}} = \frac{\mu_0 iR^2}{2(R^2 + 3R^2)^{3/2}}$$

$$= \frac{\mu_0 iR^2}{2(4R^2)^{3/2}} = \frac{\mu_0 i}{16R}$$

So, $\frac{B_1}{B_2} = \frac{16}{2} = \frac{8}{1}$

$B_1 : B_2 = 8 : 1$

Q.39 (C)

$\lambda_m T = b$ (Wien's law)

$$T = \frac{b}{\lambda_m} = \frac{2898\times 10^{-6}}{289.8\times 10^{-9}} = 10^4 \text{ k}$$

$$I(\text{intensity}) = \frac{Q}{AT} = \sigma T^4$$

$= 5.67 \times 10^{-8} \times (10^{16})$

$= 5.67 \times 10^{8}$ Wm^{-2}

Q.40 (D)

The internal resistance of the cell .

$$r = \left(\frac{\ell_1 - \ell_2}{\ell_2}\right)R$$

$$= \frac{240-120}{120} \times 2 = 2\Omega$$ **Ans.**

Q.41 (D)

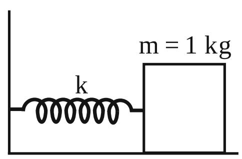
Minimum distance = x_1
Minimum speed = v_0
Maximum distance = x_2
Let the maximum speed is *v*.
As there is no external torque acting on the system, so the angular momentum remains constant. Let *m* be the mass of the planet.
Minimum speed (v_0) is possible at the maximum distance (x_2) while maximum speed (v) is possible at the minimum distance (x_1) from the sun.

$$\therefore\ mv_0x_2 = mvx_1 \text{ or } v = \frac{v_0x_2}{x_1}$$

Q.42 (B)

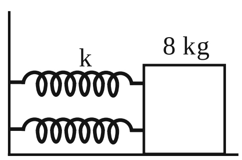
If 1 kg block attached to a spring vibrates with a frequency,

$$\upsilon = \frac{1}{2\pi}\sqrt{\frac{k}{m}} = 1\text{ Hz}$$



$\Rightarrow k = 4\pi^2\ \text{N m}^{-1}$
When two springs are attached in a parallel to an 8 kg block, then

$$k_{eq} = k + k = 2k$$



$$\text{Frequency, } \upsilon' = \frac{1}{2\pi}\sqrt{\frac{k_{eq}}{m'}}$$

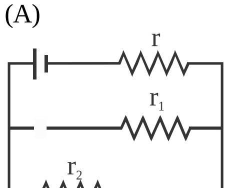
$$= \frac{1}{2\pi}\sqrt{\frac{2k}{8}} = \frac{1}{2\pi}\sqrt{\frac{2\times4\pi^2}{8}} = \frac{1}{2}\text{Hz}$$

Q.43 (A)

$$E = -\frac{dV}{dr} = -4ar \equiv \frac{\rho r}{3\varepsilon_0} \text{ (compare)}$$

Result inside uniformly charged solid sphere.
$\rho = -12a\varepsilon_0$
$\lambda = 12$

Q.44 (A)



In steady state

$$\text{Current } I = \frac{E}{r + r_2}$$

$$\text{Potential disterence across AB} = Ir_2 = \frac{Er_2}{r + r_2}$$

Charge on capacitor $Q = C\,(\Delta V)_{AB}$

$$Q = \frac{CEr_2}{r + r_2} = 10\mu C$$

Q.45 (C)

The objective of compound microscope is a convex lens and it forms real and enlarged image when an object is placed between its focus and lens.

Q.46 (B)

Since Co-ordinate of point B is (5.5, 0) hence the threshold frequency is 5.5×10^{14}Hz.

$E_{threshold} = hf = 6.62\times10^{-34} \times 5.5\times10^{14}$
$= 36.41 \times 10^{-20}$

(B & A points are near each other)

$$\therefore\quad \phi = \frac{36.41\times10^{-20}}{1.6\times10^{-19}}\text{eV} = 2.27\text{ eV}$$

Q.47 (D)

Q.48 (A)

$$\frac{1}{2}C_{min}V^2 = \frac{1}{2}Li^{-2}$$

$$C_{min} = = \frac{Li^2}{V^2} = \frac{(1)(1)^2}{(200)^2} = 25\ \mu F$$

Q.49 (C)

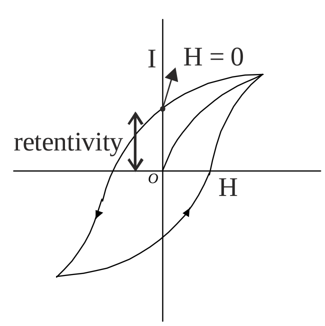
$$\text{Second overtone of open pipe} = \frac{3V}{2l}$$

$$\text{First overtone of closed pipe} = \frac{3V}{4L}$$

$$\text{Given, } \frac{3V}{2l} = \frac{3V}{4L}$$

$$l = 2L$$

Q.50 (B)



CHEMISTRY

Q.51 (B)

Distance between two nearest neighbours in bcc

$$= \frac{\sqrt{3}a}{2} = \frac{\sqrt{3}\times\sqrt{2}}{2} = \frac{1.732\times\sqrt{2}}{2} = 4.503\ \text{Å}.$$

Q.52 (C)

$x - 2 + 5(0) = 0$

$x = +2$

C.N. = 6

Q.53 (C)

Q.54 (D)

Smaller the ion more is the extent of hydration. The hydration enthalpies of alkali metal ions decrease with increase in ionic size

$Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$

Li^+ has the maximum degree of hydration.

Q.55 (C)

Q.56 (A)

$$Cl_2 + \underset{\text{(Cold \& dilute)}}{2NaOH} \longrightarrow NaCl + NaOCl + H_2O$$

Q.57 (B)

$\Delta H = +ve$ for endothermic reaction.

Q.58 (D)

H_2SO_4 is a strong dehydrating agent.

Q.59 (A)

Molisch's test is used to detect the presence of carbohydrates.

Q.60 (C)

Q.61 (A)

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

Isomerization reaction

Q.62 (A)

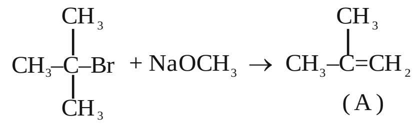
Q.63 (D)

Tollen's reagent oxidizes the compound having aldehyde group like glucose and also oxidizes a-hydroxy ketones having $-COCH_2OH$ group as in fructose.

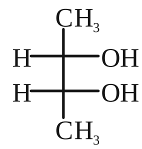
Q.64 (D)

Since the oxidation number of Ni increases from 0 to 2, therefore it acts as reducing agent.

Q.65 (B)



Q.66 (B)



It contains plane of symmetry so it is optically inactive.

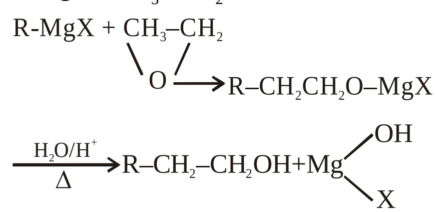
Q.67 (D)

Solid + Heat $\rightarrow$ Liquid

Hence, when heat is added to the equilibrium then according to Le-Chatelier's principle equilibrium shifts in the direction where heat is consumed that is, in the forward direction to form more liquid and amount of solid to decrease.

Q.68 (A)

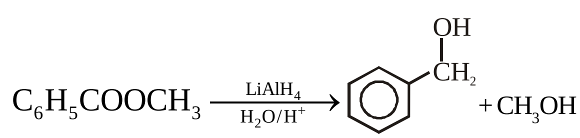
R-MgX + $CH_3 - CH_2$



Q.69 (B)

The emf of the cell cannot be zero because concentration of H^+ ions in two electrolytic solutions is different. HCl is a strong acid while acetic is a weak acid and hence their pH will be different.

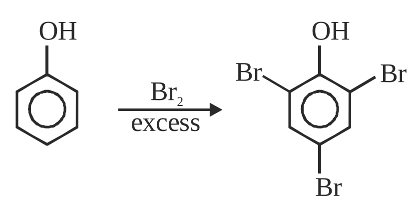
Q.70 (B)



Q.71 (B)

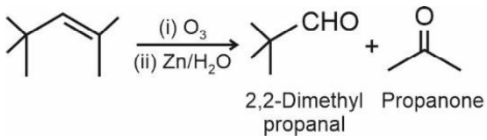
The relative lowering of the vapour pressure of dilute solution is equal to the mole fraction of the solute molecule present in the solution.

Q.72 (D)



Q.73 (D)

Q.74 (C)



Q.75 (C)
Given that
I = 5 ampere
t = 40 min = 40 × 60 = 2400 sec
Amount of electricity passed

$$Q = It = 5 \times 2400 = 12000\ C$$

$$Zn^{+2} + 2e^- \longrightarrow Zn \qquad (n = 2e^-)$$

From Faraday first law,
W = Zlt (Z = equivalent mass)

$$= \frac{Mass}{nF} \quad (Mol.Mass\ of\ Zn = 65.39)$$

$$= \frac{65.39}{2 \times 96500} g\ \ Zinc$$

Therefore, 12000 C charge will deposit

$$= \frac{65.39 \times 12000}{2 \times 96500} = 4.065\ \ g\ of\ Zn$$

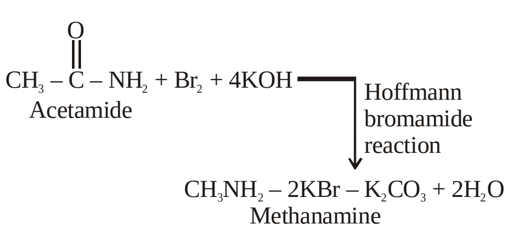
Q.76 (B)
Ambident nucleophiles have more than one site of attack.

Q.77 (A)
As osmotic pressure is a colligative property i.e., it depends only on number of particles.
Among the given options only $CaCl_2$ gives the highest number of particles (ions) on dissociation.
$CaCl_2 \longrightarrow Ca^{2+} + 2Cl^-$ (3 ions)
While KCl gives only two particles (ions)
$KCl \longrightarrow K^+ + Cl^-$ (2 ions)
Glucose and urea do not dissociate and thus behave as single particles.
Thus, highest osmotic pressure is exerted by $CaCl_2$.

Q.78 (D)

$EAS \propto s\frac{1}{EWG}$ on Benzene ring.

Q.79 (D)
Q.80 (A)



Q.81 (B)

Q.82 (B)
Aromatic diazonium salts are more stable due to dispersal of the positive charge on benzene ring.

Q.83 (C)

Q.84 (B)

Q.85 (A)

Q.86 (B)
Glyptal is used in the manufacture of paints and lacquers.

Q.87 (A)
A → B, volume is not changing (Isochoric)
B → C Isobaric
C → A Temperature is constant (Isothermal)

Q.88 (C)
Sulphur dioxide is widely used in the food & drinks industries for its properties as a preservative & antioxidant.

Q.89 (D)
$pK_w = -\log K_w = -\log 1 \times 10^{-12} = 12.$

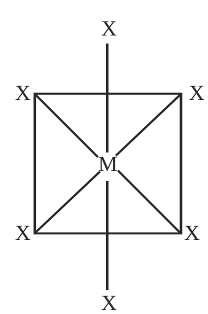
$$K_w = [H^+][OH^-] = 10^{-12}.$$

$$[H^+] = [OH^-]$$

$\Rightarrow [H^+]^2 = 10^{-12}; [H^+] = 10^{-6}; pH = -\log[H^+]$
$= -\log 10^{-6} = 6.$
H_2O is neutral because $[H^+] = [OH^-]$ at 373 K even when pH = 6.
(D) is not correct at 373 K. Water cannot become acidic.

Q.90 (A)
$NH_4Cl + H_2O \rightleftharpoons NH_3.H_2O + Cl^- + H^+$ (Acidic solution due to hydrolysis of NH_4^+ ion).

Q.91 (A)
In octahedral structure MX_6, the six hybrid orbitals (sp^3d^2) are directed towards the corners of a regular octahedral with an angle of 90°. According to following structure of MX_6 the number of X-M-X bonds at 90° must be Twelve.



Q.92 (B)

It is a octahedral void.

Q.93 (C)

NH_3 has lone pair of electron while BF_3 is electron deficient compound so they form a co-ordinate bond $NF_3 \rightarrow BF_3$

Q.94 (D)

In rock salt structure, Cl^- forms fcc (ccp) lattice & Na^+ occupies octahedral voids, So tetrahedral voids are vacant.

Q.95 (A)

The four water molecules are attached with secondary valencies of the metal atom, e.g., $[Cu(H_2O)_4]SO_4.H_2O$.

Q.96 (A)

Dialysis is used to purify colloid.

Q.97 (B)

In an octahedral crystal field t_{2g} orbitals are lowered in energy by 0.4 Δ_0.

Q.98 (B)

Q.99 (D)

There are 6 electrons in its ultimate and penultimate shell.

Q.100 (C)

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