AITS FULL TEST-02

ANSWER KEY

PHYSICS

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

CHEMISTRY

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

BIOLOGY

Q.101 (1)	**Q.102** (3)	**Q.103** (2)	**Q. 104** (1)	**Q.105** (2)	**Q.106** (3)	**Q.107** (3)	**Q.108** (3)	**Q.109** (1)	**Q.110** (4)
Q.111 (1)	**Q.112** (3)	**Q.113** (3)	**Q.114** (2)	**Q.115** (2)	**Q.116** (2)	**Q.117** (3)	**Q.118** (3)	**Q. 119** (3)	**Q.120** (1)
Q.121 (4)	**Q.122** (2)	**Q.123** (2)	**Q.124** (2)	**Q.125** (2)	**Q.126** (2)	**Q.127** (4)	**Q.128** (4)	**Q.129** (4)	**Q.130** (3)
Q. 131 (3)	**Q.132** (4)	**Q.133** (1)	**Q.134** (1)	**Q. 135** (2)	**Q.136** (4)	**Q.137** (1)	**Q.138** (2)	**Q.139** (3)	**Q.140** (1)
Q.141 (3)	**Q.142** (4)	**Q.143** (2)	**Q.144** (3)	**Q.145** (4)	**Q.146** (2)	**Q.147**-**(1)**	**Q.148** (3)	**Q.149** (4)	**Q. 150** (4)
Q.151 (3)	**Q.152** (4)	**Q. 153** (4)	**Q.154** (2)	**Q.155** (1)	**Q.156** (1)	**Q.157** (4)	**Q.158** (3)	**Q.159** (3)	**Q.160** (2)
Q.161 (4)	**Q.162** (3)	**Q.163** **(3)**	**Q.164** (4)	**Q.165** (3)	**Q.166** (4)	**Q. 167** (2)	**Q.168** (4)	**Q. 169**–(2)	**Q.170** (2)
Q.171 (2)	**Q.172** (4)	**Q.173** (3)	**Q.174** (4)	**Q.175** (4)	**Q.176** (2)	**Q.177** (4)	**Q.178** (1)	**Q.179** (4)	**Q. 180** (3)
Q.181 (2)	**Q.182** (1)	**Q.183** (2)	**Q. 184** (3)	**Q.185** (1)	**Q.186** (2)	**Q.187** (1)	**Q.188** (2)	**Q.189** (2)	**Q.190** (3)
Q.191 (2)	**Q.192** (2)	**Q.193** (3)	**Q.194** (3)	**Q.195** (4)	**Q.196** (1)	**Q.197** (1)	**Q.198** (4)	**Q. 199** (1)	**Q.200** (1)

PHYSICS
Section-A

Q. 1 (4)

From the principle of homogeneity, only those physical quantities can be added or subtracted who has same dimensions. So, 2A – 3B is meaningful and different dimension physical quantity can be divided or multiplied.

Q.2 (3)

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

$$= \frac{6.237}{3.5}$$

$= 1.782$

In this question density should be reported to two significant figures. As rounding of the number, we get density = 1.8 g/cm^3

Q.3 (3)

Slope of position-time graph represents velocity. And magnitude of velocity is speed.

So, $\frac{V_A}{V_B} = \frac{|\text{slope of A}|}{|\text{slope of B}|} = \frac{|\tan 135°|}{|\tan 60°|}$

$$\Rightarrow \frac{V_A}{V_B} = \frac{|-1|}{|\sqrt{3}|} = \frac{1}{\sqrt{3}}$$

Q.4 (3)

On a horizontal ground projectile $R = \frac{u^2 \sin 2\theta}{g}$

For R_{max} $\sin(2\theta) = 1$ $\Rightarrow \theta = 45°$

Q.5 (2)

Energy stored in spring, $U = \frac{1}{2}kx^2$

where k = spring constant

x = extension/compression

$$\Rightarrow U = \frac{1}{2}kx^2$$

$$\Rightarrow U' = \frac{1}{2}K(2x)^2 = 4\left(\frac{1}{2}kx^2\right) = 4U$$

Q.6 (4)

According to conservation of momentum

$$mv = \left(\frac{m}{4}\right)v_1 + \left(\frac{3m}{4}\right)v_2 \Rightarrow v_2 = \frac{4}{3}v$$

(as $v_1 = 0$)

Q.7 (2)

$$\omega_i = 1200 \times \frac{2\pi}{60} = 40\,\pi \text{ rad/s}$$

$\omega_f = 0$

$\alpha = -2 \text{ rad/s}^2$

$$\omega_f^2 = \omega_i^2 + 2\alpha\,\theta$$

$0 = (40\,\pi)^2 - 2(2)\,\theta$

$$\theta = \frac{40\pi \times 40\pi}{4} \Rightarrow 400\,\pi^2$$

$$N = \frac{\theta}{2\pi}$$

$$N = \frac{400\pi^2}{2\pi}$$

$N = 200\,\pi$ rev

$= 628$ rev

Q.8 (2)

Due to inertia of motion, fan continues to rotate. But as electricity is switch-off, so no more energy is supplied to fan and due to opposition or retradation provided by the air, fan slows down and finally comes to rest.

Q.9 (3)

Potential at center of earth,

$$V_{center} = \frac{-3}{2}\frac{GM}{R}$$

and acceleration due to gravity, $g = \dfrac{GM}{R^2}$

$$\Rightarrow \frac{GM}{R} = gR$$

$$\therefore V_{center} = \frac{-3}{2}gR$$

Q.10 (3)

$y = Kt$

$$a = \frac{d^2y}{dt^2} = 0$$

$$T_1 = 2\pi\sqrt{\frac{l}{g}} \quad ; \quad T_2 = 2\pi\sqrt{\frac{l}{g}}$$

$$\therefore \frac{T_1^2}{T_2^2} = \frac{1}{1}$$

Q.11 (3)

For Monoatomic

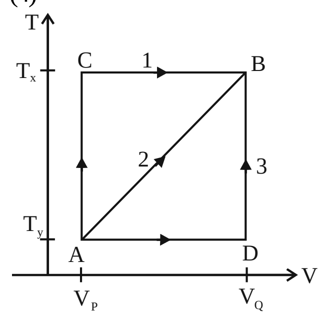
$$C_V = \frac{3R}{2}, C_P = \frac{5R}{2}$$

For Diatomic

Rigid $C_V = \dfrac{5R}{2}, C_P = \dfrac{7R}{2}$

Non Rigid $C_V = \dfrac{7R}{2}, C_P = \dfrac{9R}{2}$

Q.12 (4)



AC is isochoric process

$\Rightarrow WD_{AC} = 0$

Similarly, $WD_{DB} = 0$

$T_x > T_y$

$$WD_{CB} = nRT_x \ln\frac{V_Q}{V_P}$$

$$WD_{AD} = nRT_y \ln\frac{V_Q}{V_P}$$

AB is an isobaric process

Q.13 (3)

For engine A, $T_1 = 400$ K
$T_2 = 350$ K

$$\eta_A = 1 - \frac{T_2}{T_1} = 1 - \frac{350}{400}$$

$$= 1 - \frac{7}{8} = \frac{1}{8}$$

For engine B, $T_1 = 350$ K, $T_2 = 300$ K

$$\eta_B = 1 - \frac{300}{350} = 1 - \frac{6}{7} = \frac{1}{7}$$

$$\text{Ratio} = \frac{\eta_A}{\eta_B} = \frac{7}{8}$$

Q.14 (3)

Q.15 **(3)**

Travelling microscope is used to find radius of meniscus.

Q.16 (4)

Field lines are perpendicular to conducting surface and field inside conductor is zero.

So option (4)

Q.17 (1)

$\phi \propto q$ ....(i)

After addition flux becomes ϕ.

$\phi \propto q'$ ....(ii)

$$\frac{\phi}{\phi} = \frac{q'}{q} = \frac{100}{20} = 5$$

$\phi' = 5\phi$

change in flux $\Delta\phi = \phi' - \phi = 4\phi$

Q.18 (1)

$$U_{initial} = \frac{1}{2}CV^2$$

$$C' = \frac{C}{3}, V' = \frac{q}{C'} = \frac{3q}{C'} = 3V$$

$$U_{final} = \frac{1}{2}\left(\frac{C}{3}\right)(3V)^2 = \frac{3CV^2}{2}$$

$W = U_{final} - U_{initial} = CV^2$

Q.19 (1)

From balanced condition,

$(100 - l_1)\,6 = Rl_1$ ....(i)

and $(100 - l_1 - 0.4\,l_1)\,6 = \frac{R}{2}(l_1 + 0.4l_1)$

$\Rightarrow (100 - 1.4\,l_1)\,6 = \frac{1.4Rl_1}{2}$ ....(ii)

Divide, $\frac{100 - l_1}{100 - 1.4l_1} = \frac{1}{0.7}$

$\Rightarrow 70 - 0.7\,l_1 = 100 - 1.4\,l_1$

$\Rightarrow 0.7l_1 = 30$

$\Rightarrow l_1 = \frac{30}{0.7} = \frac{300}{7}$

Put in equation (i)

$$\left(100 - \frac{300}{7}\right)6 = R \times \frac{300}{7}$$

$\Rightarrow R = 8\,\Omega$

Q.20 (4)

Resistance of the device would be largest for the case of voltmeter.

$V = i_g(R + r_g)$

Device resistance is $R_x = R + r_g$

Given $I_g = 1 \times 10^{-3}$ mA

$V = i_g \times R_x = 1 \times 10^{-3} \times R_x$

$R_x = 1000$ A

Maximum value will correspond to voltmeter of reading 10 V

Q.21 (3)

$$\frac{dl}{l} = \frac{0.4}{100}$$

Volume change = zero

$$\Rightarrow \frac{dl}{l} + \frac{dA}{A} = 0 \quad \Rightarrow \frac{dA}{A} = \frac{-0.4}{100}$$

$$R = \frac{\rho l}{A} \Rightarrow \frac{dR}{R} = \frac{dl}{l} - \frac{dA}{A}$$

$$\Rightarrow \frac{dR}{R} = \frac{0.4}{100} - \left(-\frac{0.4}{100}\right) = \frac{0.8}{100}$$

Q.22 (3)

p.d. across $8\Omega = E$

$$E = \left(\frac{12}{6+8+10}\right) \times 8$$

$E = 4V$

Q.23 (3)

Condition in all three $\vec{V}, \vec{B}$ and $\vec{l}$ should be perpendicular to each other.

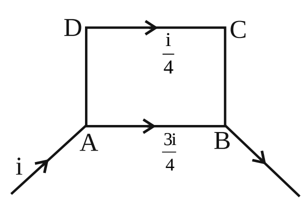
And $\vec{V} \times \vec{B}$ is parpendicular to both $\vec{V}$ and $\vec{B}$

$\Rightarrow (\vec{V} \times \vec{B}) \parallel \vec{l}$.

Q.24 (3)

Magnetic field $\propto$ current

$\Rightarrow B \propto i$



$$\Rightarrow \frac{B_{AB}}{B_{CD}} = \frac{3}{1}$$

Q.25 (3)

Output power required = 105 W

Input power given, $P_{in} = V_{in}I_{in}$

$\Rightarrow P_{in} = 220 \times \frac{1}{2} = 110$ W

Efficiency, $\eta = \frac{105}{110} \times 100 = 95\%$

Q.26 (3)

$$\cos\phi = \frac{R}{Z} = \frac{10}{20} = \frac{1}{2} \Rightarrow \phi = 60^\circ$$

Q.27 (2)

$$\frac{1}{f_1}=(1.5-1)\left(\frac{1}{14}\right)=\frac{1}{28}$$

$$\frac{1}{f_2}=(1.2-1)\left(\frac{1}{14}\right)=\frac{1}{70}$$

$$\frac{1}{f}=\frac{1}{f_1}+\frac{1}{f_2}=\frac{1}{28}+\frac{1}{70}=\frac{10+4}{280}=\frac{1}{20}$$

If $u=-40$ cm, $v=?$

$$\frac{1}{v}-\frac{1}{-40}=\frac{1}{20}\Rightarrow v=40\text{cm}$$

Q.28 (3)

Both the lens forms magnified image and magnification is the purpose of microscope. First image is real and inverted. Second image is virtual and erect.

Q.29 (3)

$eV_0=h\nu-\phi_0$

$1.6e=h\times 6\times 10^{14}-\phi_0$ ....(i)

$0=h\times 2\times 10^{14}-\phi_0$ ....(ii)

After solving eq. (i) and (ii)

$\phi_0=0.8\,\text{eV}$

Q.30 (2)

$mvr=\frac{nh}{2\pi}$, according to Bohr's theory

$$\Rightarrow 2\pi r=n\left(\frac{h}{mv}\right)=n\lambda \text{ for } n=2,\ \lambda=\pi r$$

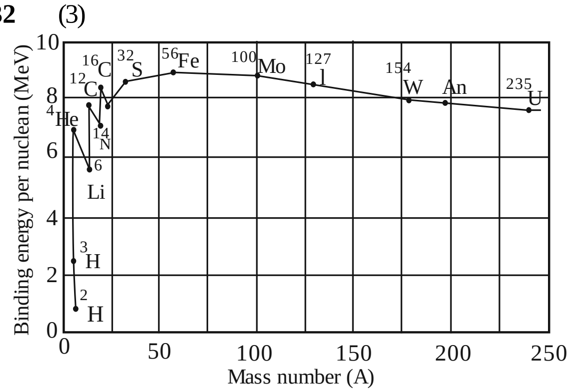
Q.31 (2)

Radius in n^{th} orbit

$$r_n\propto\frac{n^2}{z}$$

$\Rightarrow$ 9 times

Q.32 (3)



From the above graph we notice the following main features of the plot:

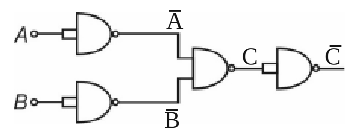
The binding energy per nucleon (Ebn) is practically constant, i.e. practically independent of the atomic number for nuclei of middle mass number ($30 < A < 170$)

The curve has a maximum of about 8.75 MeV for A = 56 and has a value of 7.6 MeV for A = 238.

Ebn is lower for both light nuclei ($A < 30$) and heavy nuclei ($A > 170$).

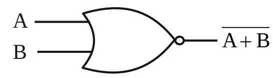
Also from this, we can see that Fe or iron has the highest binding energy per nucleon, hence it is the most stable nucleus among all.

Q.33 (3)

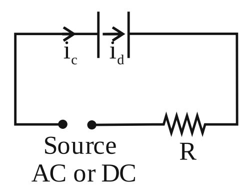


$$C=\overline{\bar{A}\,\bar{B}}=\bar{\bar{A}}+\bar{\bar{B}}=A+B$$

$$\bar{C}=\overline{A+B}=\bar{A}+\bar{B}$$



Q.34 (3)



From Kirchoff's current law,

$$\Sigma i_{in}=\Sigma i_{out}$$

$\Rightarrow i_{\text{conduction current}}=i_{\text{displacement}}$

$\Rightarrow i_c=i_d$ (always)

independent of type of source.

Q.35 (3)

$$F_{ext}=\frac{B^2\ell^2 v}{R_{total}}$$

$$F_{ext.}=\frac{4\times1\times2}{4}=2\text{N}$$

SECTION-B

Q. 36 (2)

As speed of light, $c=\sqrt{\frac{1}{\mu_0\varepsilon_0}}$

so, $\sqrt{\frac{2}{\mu_0\varepsilon_0}}=\sqrt{2}\,c$

$$\Rightarrow\left[\sqrt{\frac{2}{\mu_0\varepsilon_0}}\right]=\left[LT^{-1}\right]$$

Q.37 (1)
Still water will not apply any external horizontal force.
So, $a_{cm} = 0 \quad \Rightarrow dV_{cm} = 0$
As initial $V_{cm} = 0$
$\Rightarrow$ Finally $V_{cm} = 0$
$\Rightarrow$ Position of C.O.M. = constant
$\Rightarrow$ No shift of C.O.M.

Q.38 (3)
Escape velocity, $V_e = \sqrt{\dfrac{2GM}{R}}$
where M = mass of the planet
R = radius of the planet

$$\Rightarrow \frac{V_1}{V_2} = \sqrt{\frac{M_1}{M_2}\frac{R_2}{R_1}}$$

$$\Rightarrow \frac{V_1}{11.2} = \sqrt{\frac{8m}{m}\frac{R}{2R}} = 2$$

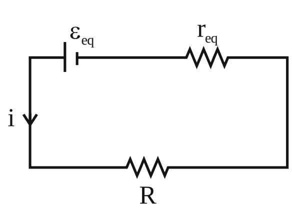
$\Rightarrow V_1 = 22.4$ km/s

Q.39 **(4)**
While studying the dissipation of energy of a simple pendulum stop watch is not essential.

Q.40 (2)
Searle's apparatus is an experimental set-up or procedure which is used for the measurement of Young's modulus. It consists of two equal length wires that are attached to a rigid support.

Q.41 (3)
$P_0 + \rho g d_1 = P_1$
$P_0 + \rho g d_2 = P_2$
$\rho g(d_2 - d_1) = P_2 - P_1$
$10^3 \times 10\,(d_2 - d_1) = 3.03 \times 10^6$
$d_2 - d_1 = 303$ m
$\simeq 300$ m

Q.42 (3)



$\varepsilon_{eq} = 5 \times 4 = 20$ V
$r_{eq} = 5 \times 0.4 = 2\ \Omega$

$$i = \frac{\varepsilon_{eq}}{R + r_{eq}} = \frac{20}{2+2} = 5A$$

Q.43 (4)
For equilibrium,
Torque = zero
$\Rightarrow \vec{M} \times \vec{B} = 0$
$\Rightarrow MB\sin\theta = 0$
$\Rightarrow \sin\theta = 0$
$\Rightarrow \theta = 0$ and π
two orientation exist
At stable equillibrium, potential energy is minimum $U = -\vec{p}.\vec{E} = -pE$ (at $\theta = 0°$)
At unstable equilibrium, potential energy is maximum
$\Rightarrow U = -\vec{p}.\vec{E} = +pE$
(at $\theta = \pi$)

Q.44 **(4)**

$$\text{Power, } P = \frac{V_0 I_0}{2}\cos\frac{\pi}{2} = 0$$

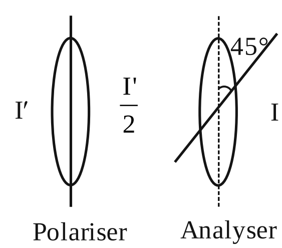
Q.45 (1)
By snell's law
$n_1 \sin 45 = n_2 \sin r_1$ .... (1)
$n_2 \sin r_1 = n_3 \sin r_2$ .... (2)
from equation (1) and equation (2)
$n_1 \sin 45 = n_3 \sin r_2$

$$(1)\frac{1}{\sqrt{2}} = \sqrt{2}\sin r_2$$

$$\sin r_2 = \frac{1}{2}$$

$$\boxed{r_2 = 30°}$$

Q.46 (3)



From malus law :

$$I = \frac{I'}{2}\cos^2 45°$$

$$\Rightarrow I = \frac{I'}{2}\left(\frac{1}{\sqrt{2}}\right)^2 = \frac{I'}{2}\left(\frac{1}{2}\right)$$

$\Rightarrow I' = 4I$

Q.47 (4)

$$\lambda_{min} = \frac{hc}{eV} = \frac{12400eV - Å}{40KeV} = 0.31Å$$

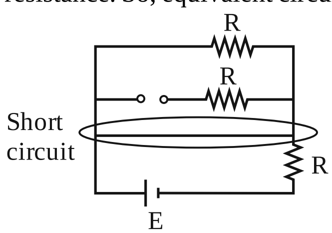
Q.48 (3)

$$A \xrightarrow{\alpha} A_1 \xrightarrow{\beta-} A_2 \xrightarrow{\alpha} A_3 \xrightarrow{\gamma} A_4$$

$$^{180}_{72}A \xrightarrow{\alpha} {}^{176}_{70}A_1$$

$$\xrightarrow{\beta-} {}^{176}_{71}A_2 \xrightarrow{\alpha} {}^{172}_{69}A_3 \xrightarrow{\gamma} {}^{172}_{69}A_4$$

Q.49 (1)
For forward biased, ideal diode provides zero resistance. For reverse biased, ideal diode provides infinite resistance. So, equivalent circuit diagram is



$$i = \frac{\varepsilon}{R}$$

Q.50 (3)

$$V = \frac{1}{\sqrt{9\mu_0\varepsilon_0}}$$

$$V = \frac{C}{3}$$

$$\lambda' = VT$$

$$\lambda' = \frac{\lambda}{3}$$

CHEMISTRY
SECTION-A

Q.51 (3)

	2A	+	3B	$\rightarrow$	2 C
Given mole	4		6		?

According to stoichiometry of reaction 2 mole of A react with 3 mole of B to from 2 mole of C
$\therefore$ 4 mole of A will react with 6 mole of B to from 4 mole of C
Ans .(3) – mole of C

Q.52 (3)
For n = 4 value of ℓ may be = 0, 1 , 2 , 3, not 4
So, this set of quantum number does not exist.

Q.53 (3)
Given $\Delta_{fus}H$ of H_2O = 6 kJ /mol
36g H_2O = 2 mol H_2O
$\therefore$ Heat required = 6 × 2 KJ = 12KJ

Q.54 (4)
$K_P = K_C (RT)^{\Delta ng}$
If $\Delta ng = 0$ then $K_p = K_c$
For (1) option $\Delta n_g = 3 - 2 = 1$
For (2) option $\Delta n_g = 2 - 1 = 1$
For (3) option $\Delta n_g = 1 - 4 = -3$
For (2) option $\Delta n_g = 2 - 2 = 0$
$\therefore$ Correct option (4)

Q.55 (4)
Acidic buffer solution contain mixture of weak acid & its salt with strong base and basic buffer contain mixure of weak base and its salt with strong acid.
So (4) option is not correct

Q.56 (2)

Q.57 (1)

$[2I^- \rightarrow I_2 + 2e^-] \times 5$

$[MnO_4^- + 8H^+ + 5e^- \rightarrow Mn^{2+} + 4H_2O] \times 2$

$2MnO_4^- + 10I^- + 8H^+ \rightarrow 2Mn^{2+} + 5I_2 + 8H_2O$

So for 10 mole $I^- \rightarrow$ 2 mole of MnO_4^- required

for 10 mole $I^- = \frac{2}{10} = \frac{1}{5}$ mole of MnO_4^- required

Q.58 (1)

Q.59 (4)
G.M.M. urea $(NH_2)_2CO = 32 + 12 + 16 = 60$

$$n_{urea} = \frac{12}{60} = 0.2$$

$$M = \frac{0.2\,mol}{0.5\,L} = 0.4\,M$$

Q.60 (1)
Let

$$\Lambda^0_{m(K^+)} = a,\ \Lambda^0_{m(Cl^-)} = b,\ \Lambda^0_{m(Na^+)} = c,\ \Lambda^0_{m(Br^-)} = d$$

(i) (a + b) – (c + b) = (a + d) –(c + d)
a + b – c – b = a + d – c – d
(a – c) = (a – c) $\rightarrow$ so true
Rest option will not be true.

Q.61 (2)

$$E^0_{cell} = \frac{RT}{nF}\ln k$$

$$\therefore \ln k = \frac{E^0\,nf}{RT}$$

n = 2 , F= 96500, R = 8.314

$$\therefore \ln k = \frac{2 \times 96500 \times E^o}{8.314 \times T}$$

So option 2 is correct

Q.62 (4)
$t_{1/2} = 2$ min

$\therefore K = \frac{0.693}{2} min^{-1}$

After 2 half life total time = 2 + 2 = 4 min .

$Kt = 2.303 \log\left[\frac{R_0}{R_t}\right]$

$\frac{0.693 \times 4}{2 \times 2.303} = \log\left[\frac{R_0}{R_t}\right]$

$0.6020 = \log\left[\frac{R_0}{R_t}\right]$

$\frac{R_0}{R_t}$ = antilog 0.6020 = 3.999 ~ 4

As rate of reaction is directly proportion to the concentration of reaction so ratio of intial rate to the rate after two half life will be same of ratio of concentration.

Q.63 (4)

At 25ºC rate of reaction = r

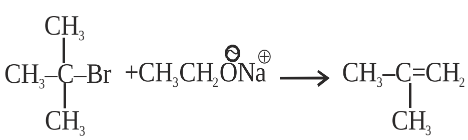
∴ at 35 ºC rate of reaction = 2r (as it is given that rate become nearly doubled)

∴ at 45 ºC rate of reaction = 2 × 2r = 4r

∴ at 55 ºC rate of reaction = 2 × 4r = 8r

∴ Ans 8r

Q.64 (1)



(P)

Q. 65 (4)

Q.66 (1)

The carbonyl group which is not contain

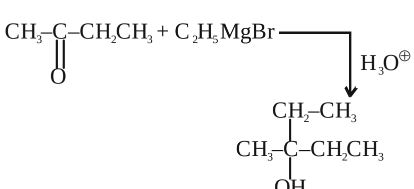
$CH_3-\underset{\underset{O}{\|}}{C}-$ group will not given iodoform reaction .

Q.67 (4)

CHO | CHO $\xrightarrow{\text{Conc. NaOH}}$ CH_2OH | COONa

[Cannizaro Reaction]

Q.68 (3)

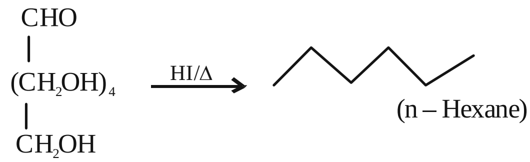


(3' Alcohol)

Q.69 (4)

All Type of primary amines can given carbyl amine test

Q.70 (1)



Q.71 (1)

$Fe_4[Fe(CN)_6]_3.xH_2O$ is prussian Blue in colour

Q.72 (1)

CH_4 is non polar molecule .

Q.73 (2)

$N_2 \rightarrow \sigma 1S^2\ \overset{*}{\sigma}1S^2\ \sigma 2S^2\ \overset{*}{\sigma}2S^2(\pi 2P^2_x = \pi 2P^2_y)\ \sigma 2P^2_2$

Q.74 (1)

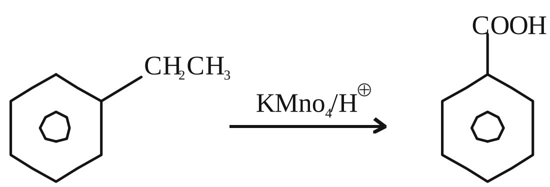
boron has high melting point in group 13.

B > Al > Tl > Ga > In

Q.75 (2)

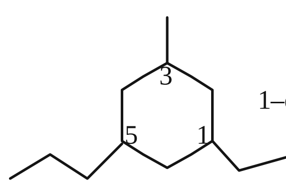
CH_4 not formed by Wurtz Reaction.

Q.76 (1)



(A)

Q.77 (2)



1–ehty1–3– methyl– 5–propyl
Cyclo Hexane

Q.78 (4)

$CH_3-\overset{\oplus}{C}=O$ Due to back bonding

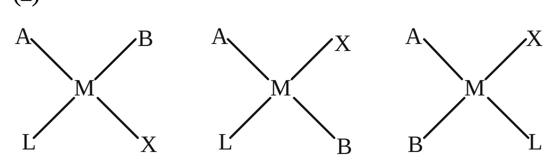
Q.79 (1)

110 → Ununnillium

Q.80 (1)

Fe^{+3} has 5 unpaired e.s Because H_2O is W.F.L

Q.81 (2)



Q.82 (2)
Pu shows + 3to +7 oxidation state which is maximum in Actinoid Series

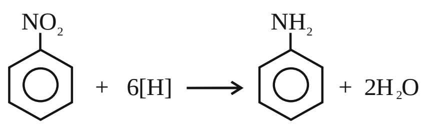
Q.83 (3)
Bond strength α % Scharacter
Na > Nb Molecule will be unstable

Q.84 (3)
Ne > F > N > O

Q.85 (2)
Phenoxide ion is more Reactive towards ESR than phenol due to more e^- density in Ring

SECTION-B

Q.86 (3)



$\therefore$ For 1 mole 6 [H] required = 6 F charge required
For 0.2 mol = 6 × 0.2 = 1.2 F charge required

Q.87 (3)
Suppose Rate Law (R) = K $[A]^x[B]^y$
$0.04 = K[0.1]^x[0.1]^y$ ——— (1)
$0.04 = K[0.2]^x[0.1]^y$ ——— (2)
$0.16 = K[0.1]^x[0.2]^y$ ——— (3)
Divide eq .(2) by (1)

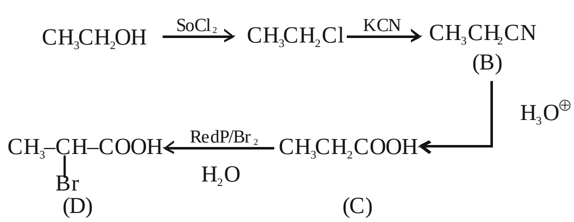
$$\left[\frac{0.2}{0.1}\right]^x = 1 \Rightarrow [2]^x = 1 \qquad \therefore x = 0$$

Divide eq (3) by (1)

$$\left[\frac{0.1}{0.2}\right]^x \cdot \left[\frac{0.2}{0.1}\right]^y = 4$$

$[2]^y = 4 \Rightarrow 2^y = (2)^2 \qquad \therefore y = 2$
overall order = 2 + 0 = 2

Q.88 (2)



Q. 89 (1)

$$CH_3-\underset{\displaystyle OH}{CH}-CH_3 + Br_2 \xrightarrow{Na_2CO_3/\Delta} \underset{(P)}{CH_3COONa + CHBr_3}$$

Q.90 (4)
3 ’ Amines will not form sulphonamides on reaction with Hinsberg′s Reagent.

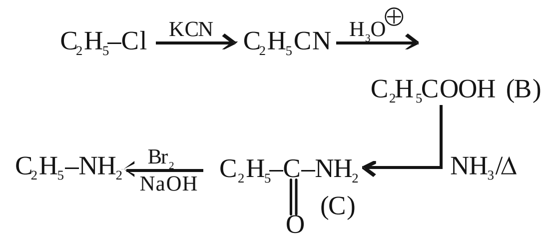
Q.91 (4)
Amylose is Straight chain polymer of α –D glucose units

Q.92 (4)

	Bond order
CO	3
CO_2	2
CO_3^{-2}	1.33

Q.93 (3)
Pb does not show catenation property
C > Si > Ge ≈ Sn

Q.94 (2)



Q.95 (2)
B > Tl >In > Ga > AI

Q.96 (2)
2 mol AgCl $[CO(NH_3)_5Cl]Cl_2$

Q.97 (1)
Ti^{+4} is not coloured Because d –d Transition is not possible .

Q.98 (1)

Q.99 (3)

$$\Delta V = \frac{h}{4\pi m\Delta x} = \frac{6.626\times10^{-34}\,Kg\,m^2s^{-1}}{4\times3.14\times40\times10^{-3}\,Kg\times1.46\times10^{-33}}$$

$= 0.9\ ms^{-1} = 90 \times 10^{-2}$ m/s
% accuracy in the measurement speed

$$= \frac{90\times10^{-2}\times100}{45} = 2\%$$

Q.100 (4)
According to Le chateliar Principle if few mole of C added then in (i) equilibrium shift in backward direction consequently moles of A & B will increases and in (ii) equilibrium will shift in forword direction.
So, mole of D will increased