UNIT TEST-02

Subject : Chemistry

Class : XII

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

Q.1 (4)

Nature and concentration of the reactants and temperature of the reaction influence the rate of reaction. But molecularity does not affect the rate of reaction as it includes the number of atoms, ions or molecules that must collide with one another to result into a chemical reaction.

Q.2 (3)

During the course of a chamical reaction, the rate of a chemical reaction decrease as the reaction proceeds.

Q.3 (4)

$\text{Rate} = k[2A]^2 \times [2B]^3$

$= 32k[A]^2 \times [B]^2$

Q.4 (1)

Q.5 (2)

$k = 3 \times 10^{-3}\ \text{min}^{-1} = \frac{3\times10^{-3}}{60}\ s^{-1} = 0.05 \times 10^{-3}$

$= 5 \times 10^{-5}\ s^{-1}$

$\therefore$ Rate = k [R]

$[R] = \frac{\text{Rate}}{k} = \frac{2\times10^{-4}\,M\,s^{-1}}{5\times10^{-5}s^{-1}} = \frac{20}{5} = 4M.$

Q.6 (2)

$t_{50\%} = t_{\frac{1}{2}} = 45\ \text{min.} \therefore K = \frac{0.693}{45}$

$t_{99.9} = \frac{2.303 \times 45}{0.693} \log \frac{1000}{0.1}$

$= \frac{2.303\times45\times3}{0.693} = 450\ \text{min.} = 7.5\ \text{Hr.}$

Q.7 (2)

$t_{50\%} = \frac{2.303}{k}\log 2$

$t_{75\%} = \frac{2.303}{k}\log 4$

$= 2 \times \frac{2.303}{k}\log 2 \Rightarrow t_{75\%} = 2 \times t_{50\%}$

Q.8 (3)

$K = \frac{2.303}{t}\log\frac{100}{100-x}$

$K = \frac{2.303}{20}\log\frac{100}{100-60}$ .....(i)

$\frac{2.303}{t}\log\frac{100}{100-90}$ ....(ii)

(i) / (ii)

$$\frac{K = \frac{2.303}{20}\log\frac{100}{40}}{K = \frac{2.303}{t}\log\frac{100}{10}} = \frac{1}{t}\log 10 = \frac{1}{20}\ [\log 10 - \log 4]$$

$\Rightarrow \frac{1}{t}\times 1 = \frac{1}{20}[1-0.6020]$

$\therefore$ t = 50 min.

Q.9 (3)

Molecularity is always in whole Number.

Q.10 (2)

For 75% completion, time required

$= 2t_{1/2} = 2 \times 15 = 30$ hrs

$\therefore$ (2)

Q.11 (1)

Q.12 (3)

For 90% disintegration

$A_t = 10\%\ A_0 = \frac{A_0}{10}$

For 99% disintegration; $A_t = 1\%$ of $A_0 = \frac{A_0}{100}$

$\frac{1}{t_{90\%}}\log\frac{10A_0}{A_0} = \frac{1}{t_{99\%}}\log\frac{100A_0}{A_0}$

$\frac{1}{3}\times\log_{10}10 = \frac{1}{t_{99\%}}\log 100$

$\frac{1}{3}\times 1 = \frac{2}{t_{99\%}},\ t_{99\%} = 6$ years

Q.13 (2)

The rate law for the reaction is as

$$r = \frac{dx}{dt} = k\,(A)\,(B)^2\,(C)^0 = k\,(A)\,(B)^2$$

On increasing the concntration of A, B and C two times.

$$r' = \frac{dx}{dt} = k(2A)(2B)^2(2C)^0$$

$= 8k(A)\,(B)^2$

Q.14 (2)

For zero order Rxn.

$$t_{\frac{1}{2}} = \frac{[R_0]}{2K} = \frac{2}{2K} = \frac{1}{K} \qquad \therefore K = \frac{1}{t_{\frac{1}{2}}}$$

And for zero order Rxn

Rate = K $[A]^\circ$

$$2 \times 10^{-2} = t_{\frac{1}{2}}\,[2]^\circ$$

$$t_{\frac{1}{2}} = \frac{1}{2\times 10^{-2}} = \frac{100}{2} = 50 \text{ sec.}$$

Q.15 (2)

Q.16 (2)

Rate = $K[A]\,[B_2]$ .....(i)

As rate is determine by slow step.

$A_2 \rightleftharpoons A + A$

$$K_c = \frac{[A]^2}{[A_2]} \;\; \therefore [A]_2 = K_c[A_2],\ [A] = \sqrt{K_c[A_2]}$$

Put the value of [A] in equation (i)

$$\text{Rate} = K\,[\sqrt{K_c[A_2]}\,][B_2]$$

$$= K \cdot K_C^{\frac{1}{2}}\,.[A_2]^{\frac{1}{2}}\,[B_2] = K_1\,[A_2]^{\frac{1}{2}}\,[B_2]$$

$$\therefore \text{order w.r.t. } A_2 = \frac{1}{2}$$

Q.17 (2)

Threshold energy (defination).

Q.18 (1)

$$A(g) \rightleftharpoons B(g);\ \Delta H = -20 \text{ kJ}$$

$$\frac{E_f}{E_b} = \frac{2}{3}$$

Suppose $E_f = 2x$ and $E_b = 3x$

$\Delta H = E_f - E_b = 2x - 3x = -x = -40$

$x = 40$

$E_f = 2 \times 10 = 80$ kJ/mol and $E_b = 3 \times 40 = 120$ kJ/mol

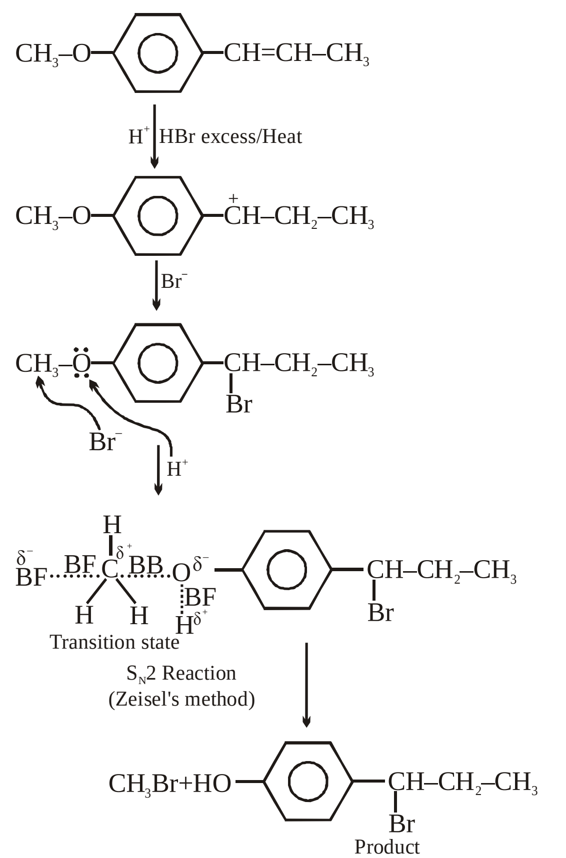
Q.19 (2)

Key idea The excess of HBr and high temperature in given reaction serves for dual purpose:

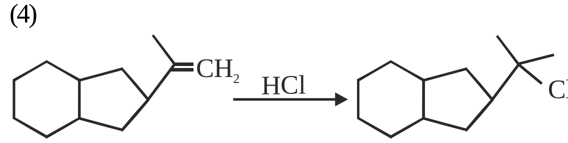
(i) Hydrolysis of ether *via* S_N2 mechanism, i.e. Zeisel's method.

(ii) Markownikoff addition at double bond of the branch.

The road map of complete reaction is as follows :



Q.20 (4)



Q.21 (4)

Q.22 (2)

Q.23 (1)

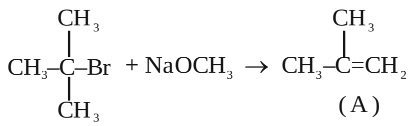
Q.24 (1)

$$CH_3CH_2\text{–}Cl + KCN \xrightarrow{\Delta} CH_3CH_2\text{–}Cl$$

[Chloro ehtane] (Alc.) (Propane nitrile)

Q.25 (2)

Q.26 (2)



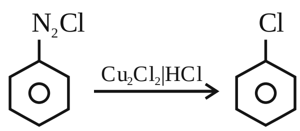
Q.27 (4)

Q.28 (3)
Alkyl aryl halides are prepared by Wurtz-Fitting reaction.

Q.29 (1)

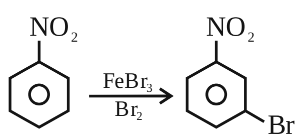
Q.30 (1)
No. disproportionate take place

Q.31 (3)



Q.32 (1)

Q.33 (2)



m–Bromo nitroBenzene

Q.34 (1)

Q.35 (3)
Due to – M of – NO_2 group

Q.36 (2)
$A \rightarrow 2B + C$
Initial conc. of $A \Rightarrow 2M$
& according to reaction we can see that 1 Mole of A on decomposition gives two mole of B & given conc. of A is 2M after completion of reaction it gives $\Rightarrow 2M \times 2 = 4M$ of B.

Q.37 (2)
Since A is taken in excess, so reaction become independent of A will depend on reactant B .

So : orden of reaction will be $\frac{1}{2}$.

Q.38 (1)

Q.39 (2)

$t_{1/2} = 69.3$ sec, $\therefore K = \frac{0.693}{69.3} = 10^{-2}\ sec^{-1}$
Now $r = K[A] = 10^{-2} \times 0.1 = 10^{-3}\ M\ sec^{-1}$

Q.40 (3)

For $t_{\frac{3}{4}}$; $t = \frac{2.303}{k} \log 4$

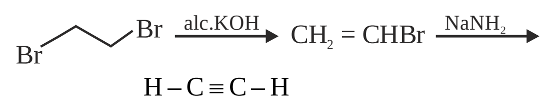
Q.41 (1)

Q.42 (2)

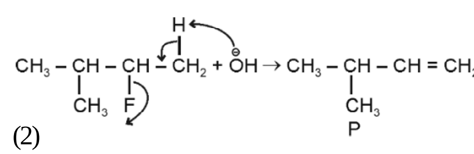
Temp. Coff.(θ)= $\frac{K_{T+10}}{K_T} = 2$ to 3

Q.43 (4)
The alkyl halides are highly reactive, the order of reactivity is
Iodide > bromide > chloride > (nature of the halogen atom).
Tertiary > secondary > primary.

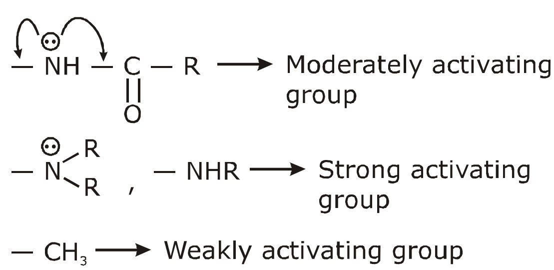
Q.44 (2)



Q.45 (3)

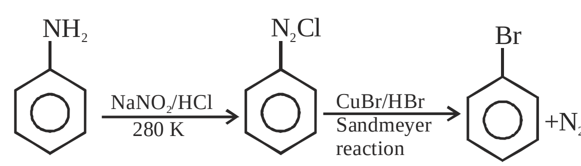


Q.46 (2)



Q.47 (3)

Q.48 (1)



Q.49 (4)

Q.50 (1)