TIME:45 min   CLASS -XII   MAX MARKS:20

1. Rate law for the reaction $A + 2B \longrightarrow C$ is found to be, Rate = k $[A][B]^2$
   Concentration of reactant 'B' is doubled, keeping the concentration of 'A'constant, the
   value of rate will be_____.   1

   (i) the same   (ii) doubled   (iii) quadrupled   (iv) halved

2. **Assertion** : Order and molecularity may be different for a reaction.   1
   Reason : Order is determined experimentally and molecularity is the sum of the
   stoichiometric coefficient of rate determining elementary step.

   (a) Both A and R are true and R is the correct explanation of A

   (b) Both A and R are true but R is not the correct explanation of A.

   (c) A is true but R is false.

   (d) A is false but R is true

3. **Assertion:** Thionyl Chlorides are preferred over Phosphorous chloride for the preparation of
   alkyl halides from alcohols .   1
   Reason: In reaction with thionyl chloride no byproducts are formed.

   (a) Both A and R are true and R is the correct explanation of A

   (b) Both A and R are true but R is not the correct explanation of A.

   (c) A is true but R is false.

   (d) A is false but R is true

4. On reaction of bromobenzene with chlorine and anhydrous $AlCl_3$, the product formed is
   a) Chlorobenzene   1
   b) 4-chlorobromobenzene
   c) 4-bromochlorobenzene
   d) 3-bromochlorobenzene

5. Draw a graph depicting the role of catalyst on rate of reaction.   1

6. Write the IUPAC name of the following :   2
   a) $(CCl_3)_3CCl$
   b) $CH_3C(p\text{-}ClC_6H_4)_2CH(Br)CH_2CH3$

7. Illustrate (any two)
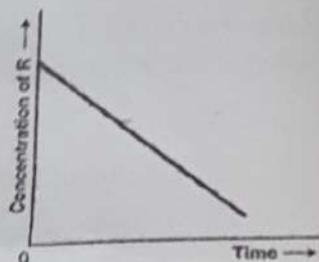   (i)   Fittig reaction   (ii) Swartz reaction   (iii) Chiral centre   2

1|

8.   For a general reaction R $\Box\rightarrow$ B, plot of concentration of R vs time is given   3

(i)   What is the order of the reaction? (ii) What is the slope of the curve? (iii) What are the units of rate constant?

9.   Show that in a first order reaction, time required for completion of 99.9% is 10 times of half-life ($t_{1/2}$) of the reaction.   3

10. (i) Primary alkyl halide C_4H_9Br (a) reacted with alcoholic KOH to give compound (b). Compound (b) is reacted with HBr to give (c) which is an isomer of (a). When (a) is reacted with sodium metal it gives compound (d), C_8H_{18} which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (a) and write the equations for all the reactions.   3+2

(ii)   Convert the following:

(a) Ethanol to nitroethane

(b) Toluene to benzyl chloride