

MAR THOMA RESIDENTIAL SCHOOL, TIRUVALLA

FIRST ASSESSMENT AUGUST 2020-21

CHEMISTRY

CLASS: XII

MARKS: 20

TIME: 30 min

SECTION – A

- (a) What do you mean by molecularity of a reaction?  
(b) What type of plot do you expect for rate versus time for a zero order reaction [2]
- Explain collision theory of reaction rates. [2]
- The decomposition of phosphine  $4\text{PH}_3 \rightarrow \text{P}_4 + 4\text{H}_2$  has rate law  $r = k[\text{PH}_3]$   
The rate constant is  $6 \times 10^{-4} \text{ s}^{-1}$  at 300 K and activation energy is  $3.05 \times 10^5 \text{ J/mol}$ . What is the value of rate constant at 310K [3]
- The following data were obtained for the reaction  $\text{A} + \text{B} \rightarrow \text{products}$  [3]

S.NO	[A]	[B]	Initial rate mol/l/s
1	1	0.15	$4.20 \times 10^{-6}$
2	2	0.15	$8.40 \times 10^{-6}$
3	1	0.20	$5.60 \times 10^{-6}$

Find the order with respect to A and B, Value of rate constant with units.

Also write the rate law.

- Give balanced equation for the following; [3]
  - Sodium chloride with manganese dioxide in presence of conc  $\text{H}_2\text{SO}_4$
  - Action of heat on ammonium dichromate
  - Copper with dilute nitric acid
- Give reasons for the following: [3]
  - Bismuth is a strong oxidising agent in pentavalent state.
  - Fluorine exhibits only -1 oxidation state but other halogens exhibit Positive oxidation state also.

(c) Noble gases have comparable large atomic size

7. Draw the shape and predict the hybridisation of

**[4]**

(a)  $\text{XeOF}_4$

(b)  $\text{BrF}_3$

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