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## GA-08-2023

### FACULTY OF SCIENCE AND TECHNOLOGY

# **B.Sc.** (First Semester) EXAMINATION

#### APRIL/MAY 2023

#### (CBCS/New Course)

#### **CHEMISTRY**

(Organic and Inorganic Chemistry-I)

(Monday, 24-4-2023)

Time: 10.00 a.m. to 12.00 noon

Time— Two Hours

Maximum Marks—40

N.B. := (i) Attempt all questions.

- (ii) Figures to the right indicate full marks.
- (iii) All questions carry equal marks.
- 1. Solve any three (out of five):

15

- (a) Write a note on long form of periodic table.
- (b) Write a note on general characteristics of p-block elements.
- (c) Explain factors affecting on electronegativity.
- (d) Explain any two preparation of XeF<sub>4</sub> with their structure.
- (e) Define electron affinity. Explain the factors affecting on it.
- 2. Solve any *three* (out of five):

15

- (a) Give the IUPAC name of the following compounds:
  - (i)  $CH_2 = CH CH = CH_9$



 $(iv) \quad {\rm CH_3COCl.}$ 

P.T.O.

- (v) CH<sub>3</sub>NHCH<sub>3</sub>.
- (b) Explain the term homolytic and heterolytic bond fission with suitable example.
- (c) Predict the product of the following reactions:
  - $(i) \qquad \text{CH}_{3} \text{MgBr} \xrightarrow{\quad \text{H}_{2} \text{O} \quad} ?$
  - (ii) 2CH<sub>3</sub>COO<sup>-</sup> Na<sup>+</sup>  $\frac{\text{Electrolysis}}{\text{H}_2\text{O}}$ ?
  - (iii)  $CH_3CH_2 C \equiv CH \frac{Lindlar Catalyst}{2} \rightarrow 2$
  - (iv) HC  $\equiv$  CH  $\xrightarrow{\text{HBr}}$ ?
  - $(v) \qquad \begin{array}{c} & & \\ & & \\ \hline & & \\ & & \\ \hline & & \\ & & \\ & & \\ \end{array} \begin{array}{c} \text{CrO}_3 \text{Al}_2 \text{O}_3 \text{ at 600°C} \\ \\ & & \\ \end{array} \begin{array}{c} \text{dehydrogenation} \end{array}$
- (d) Distinguish between carbocation and carbanion ion intermediate.
- (e) Write the IUPAC name of the following compounds:

$$\begin{array}{ccc} & & \text{CH}_3 \\ | & | \\ \text{CH}_3\text{--CH}\text{--CHO} \end{array}$$

$$(iv) \qquad \begin{array}{c} \text{CH}_3 & \text{CH}_3 \\ \text{CH}_3 - \text{CH} = \text{CH}_3 - \text{CH} - \text{CH}_3 \\ \text{CH}_3 - \text{CH} = \text{CH}_2 - \text{CH}_2 - \text{COOH} \\ (v) & \text{NH}_2 \end{array}$$

- 3. Solve any *two* of the following (out of four) :
  - (a) Discuss the mechanism of pyrrolysis of ethane.
  - (b) What happens when

$$\begin{array}{ccc} & \operatorname{CH_2--CH_2}-\operatorname{COOH} & \operatorname{Distillation} \\ | & \operatorname{CH_2--CH_2}-\operatorname{COOH} & \operatorname{--CaCO_3} \Delta \end{array}$$

$$(ii) + 3H_2 \frac{\text{Ni}}{200^{\circ} \text{ C}}$$

(c) Complete the following reactions:

$$(i)$$
  $\xrightarrow{H_3PO_4}$   $\xrightarrow{dehydration}$ 

$$(ii) \qquad \qquad \frac{\text{Alcoholic}}{\text{KOH/}\Delta},$$

(d) Explain Inductive effect in detail.