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**PA—12—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**B.Sc. (Second Year) (Fourth Semester) EXAMINATION**

**APRIL/MAY, 2024**

**(CBCS/New Pattern)**

**CHEMISTRY**

**Paper—VIII**

**(Organic and Inorganic Chemistry)**

**(Monday, 8-4-2024)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—40*

*N.B. :— Attempt all questions.*

1. Solve any *three* of the following : 3×5=15
  - (a) What are transition elements ? Explain anomalous electronic configuration of copper and chromium.
  - (b) What is lanthanide contraction ? Explain causes of lanthanide contraction.
  - (c) Explain magnetic properties of lanthanide elements.
  - (d) Explain the following properties of transition elements :
    - (i) Colour
    - (ii) Magnetic properties.
  - (e) Give the physical and chemical properties of uranium.

P.T.O.

2. Solve any *three* of the following : 15

(a) What is geometrical isomerism ? Give E and Z configuration of the following :

(i) 2-pentene

(ii) 1-chloro-2-bromo-2-iodoethene.

(b) Explain osazone formation of glucose with mechanism.

(c) How will you prepare urea by Wohler's method ? What is the action of the following on urea :

(i) Heat

(ii)  $\text{SOCl}_2$

(iii) Acetyl chloride

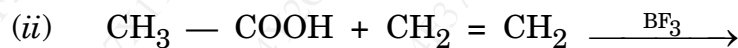
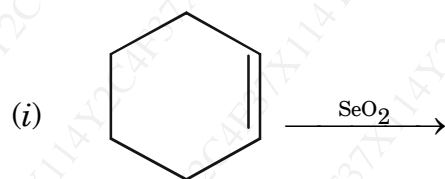
(iv) Nitrous acid.

(d) Explain the following with suitable example :

(i) Enantiomers

(ii) Diastereoisomer.

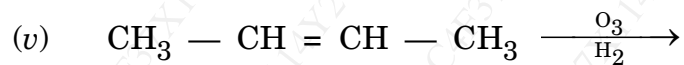
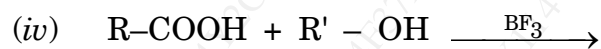
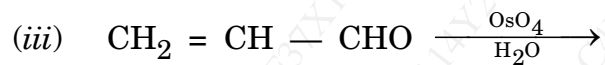
(e) Predict the product :



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3. Solve any *two* of the following :

10

(a) How will you convert :

(i) Aniline to Phenyl isocyanide

(ii) Phenol to Aniline

(iii) Nitrobenzene to Aniline

(iv) Glucose to Glucosazone

(v) Glucose to Sorbitol.

(b) Define the following terms :

(i) Asymmetric carbon atom

(ii) Racemic mixture

(iii) Resolution

(iv) Plane of symmetry

(v) Optical isomerism.

P.T.O.

(c) What is mutarotation ? Give its mechanism.

(d) Predict the product :

