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PA—09—2024

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (First Year) (Second Semester) EXAMINATION

APRIL/MAY, 2024

(New Pattern)

CHEMISTRY

Paper—III

(Organic and Inorganic Chemistry)

(Monday, 8-4-2024)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— Attempt all questions.

1. Solve any *three* of the following : 3×5=15
- (a) Explain the following properties of *p*-block elements :
- (i) Ionization energy
- (ii) Electron affinity.
- (b) Explain the variations in the following properties of *p*-block elements :
- (i) Atomic radius
- (ii) Melting point and boiling point.
- (c) Define acids and bases according to solvent system concept and Lux-Flood concept with a suitable example.

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(d) Explain the following concepts of acids and bases with suitable examples :

(i) Lewis concept

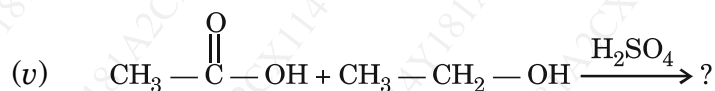
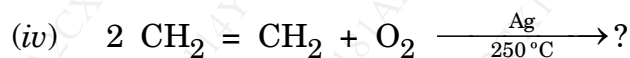
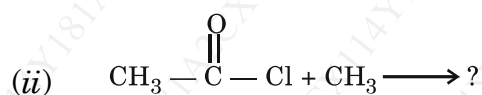
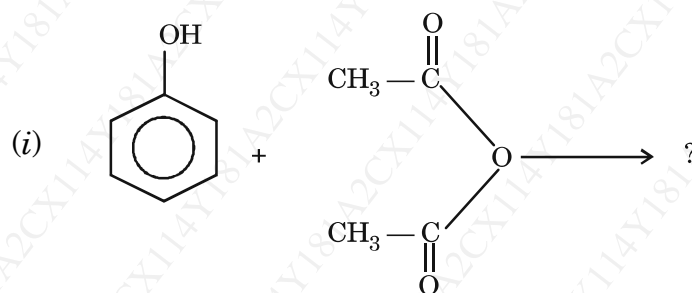
(ii) Arrhenius concept.

(e) State and explain SHAB principle. Give its limitations.

2. Attempt any *three* of the following :

3×5=15

(a) Predict the product of the following reactions :



(b) State Huckel rule. Explain aromaticity of the following compounds :

(i) Pyridine

(ii) Naphthalene.

- (c) Explain Fries rearrangement reaction with mechanism.
- (d) Explain Ullmann biphenyl synthesis with mechanism.
- (e) What are alcohols ? Give its classification.
3. Solve any *two* of the following : 2×5=10
- (a) Explain the Friedel Craft acylation reaction of benzene with mechanism.
- (b) Write the notes on the following :
- (i) Hunsdiecker reaction
- (ii) Gattermann reaction.
- (c) (1) What is the action of the following on acetic anhydride :
- (i) H_2O
- (ii) $\text{CH}_3 - \text{NH}_2$
- (iii) $\text{CH}_3 - \text{CH}_2 - \text{OH}$.
- (2) How will you convert ?
- (i) Acetamide to acetic acid
- (ii) Acetic acid to acetyl chloride.
- (d) Give Kekule's structure of benzene. Explain chlorination reaction of benzene with mechanism.