

Internal Assessment of B. Sc. Semester-III, Chemistry (Hons.)

- Candidates are required to give their answers in their own words as far as practicable.
- Answer all the questions.

CORE- V

- Q. 1. What is inert pair effect ? Give suitable examples.
- Q. 2. What is diagonal relationship ? What is the cause of this relationship ?
- Q. 3. How can boric acid be synthesized ? How does it react with following :
- (a). Heated at 100°C (b). H_2O (c) $\text{CH}_3\text{CH}_2\text{OH}$
- Q. 4. Among S and P block elements which elements has higher tendency to form complex compound and why ?

CORE -VI

- Q. 1. Write short notes on :
- (a) Claisen condensation (b) Acid and alkaline hydrolysis of ester
- Q. 2. Find out the products

(i)	A cyclopentane ring with two hydroxyl groups (HO and OH) and two phenyl groups (Ph) attached to the same carbon atom. An arrow with H ⁺ above it points to the right.
(ii)	A cyclobutane ring with a carbonyl group (C=O) and an azide group (N ₃) attached to the same carbon atom. An arrow with a triangle (Δ) above it points to the right.
(iii)	A cyclohexane ring with two ethyl ester groups (COOEt) attached at the 1 and 4 positions. An arrow with (i) EtONa above and (ii) H ⁺ /H ₂ O below it points to the right.
(iv)	A benzene ring with an amino group (NH ₂) and a carbonyl group (C=O) attached to the same carbon atom. An arrow with Br ₂ /KOH above it points to the right.
(vi)	The chemical equation: $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3 + \text{Br}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{OEt} \xrightarrow[\text{H}^+/\text{H}_2\text{O}]{\text{Zn, Benzene}}$

CORE -VII

- Q. 1. Derive an expression for rate constant for reaction of first order.
- Q. 2. The half life period of a substance is 50 minutes at a certain concentration. When the concentration is reduced to one half of the initial concentration, the half life period is 25 minutes. Calculate order of the reaction.
- Q. 3. How can order of reaction be determined by half life method or graphical method ?