

FACULTY OF SCIENCE

B.Sc. III-Semester (CBCS) Examination, November / December 2018

Subject : Chemistry

Paper – III

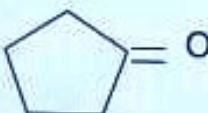
Time : 3 Hours

Max. Marks: 80

PART – A (5 x 4 = 20 Marks)

(Short Answer Type)

Note : Answer any FIVE of the following questions.

- ✓ 1 Discuss various oxidation states of f – block elements.
- ✓ 2 What is vertical plane of symmetry? Show the vertical planes present in water.
- 3 Explain the acidity of phenols.
- 4 Complete the following reactions and name them
 - (i)  $\xrightarrow[\text{base}]{\text{HN}_2\text{NH}_2}$?
 - (ii) $\text{CH}_2\text{O} + \text{CH}_2\text{O} \xrightarrow{50\% \text{ aq. KOH}}$?
- ✓ 5 Draw a labelled phase diagram of Pb-Ag system.
- 6 What is Zeta potential ? Explain.
- ✓ 7 Write a note on fullerene.
- ✓ 8 What are diastereomers? Give two examples.

PART – B (4 x 15 = 60 Marks)

(Essay Answer Type)

Note: Answer ALL questions.

- 9 (a) (i) Explain separation of lanthanides by ion exchange methods.
(ii) Discuss the electronic configuration and oxidation states of actinides.
OR
- (b) (i) What is rotational axis of symmetry? Discuss the types of rotational axes.
(ii) Explain precipitation and neutralization reactions in liquid ammonia.
- 10 (a) (i) Write the preparation of alcohols using Grignard reagent.
(ii) Explain Pinacol-pinacolone rearrangement and Riemer Tiemann Reaction.
OR
- (b) (i) Give any two methods for the preparation of ethers.
(ii) Write a note on haloform reaction and Tollen's test.

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- 11 (a) What is phase rule? Explain the curves, areas and triple point of water system with the help of its phase diagram.
OR
(b) Derive Langmuir adsorption isotherm equation and discuss its application in the determination of surface area of solids.
- 12 (a) (i) What are Cahn-Ingold-Prelog rules ? Explain with suitable examples.
(ii) Discuss any two methods for the production of carbon nanotubes.
OR
(b) (i) Discuss the conformational analysis of 1, 2, - dichloro - ethane.
(ii) Write a note on optical isomerism of Tartaric acid.
