

**FACULTY OF SCIENCE**  
**B.Sc. II-Semester (CBCS) Examination, May / June 2017**  
**Subject : Chemistry**

Paper – II

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 the classification of oxides on the basis of oxygen content with examples.
- 2 Write a note on clathrate compounds.
- 3 Compare the ease of hydrolysis of the following:  
Alkyl halides, Vinyl halides, Allyl halides, Aryl halides and Benzyl halides.
- 4 Discuss any two electrophilic substitution reactions on naphthalene.
- 5 Explain law of symmetry in crystals.
- 6 Explain the principle underlying the process of steam distillation.
- 7 Define and explain the terms : (i) co-precipitation (ii) post precipitation with suitable examples.
- 8 Describe the free electron theory of metals.

**PART – B (4 x 15 = 60 Marks)**  
**(Essay Answer Type)**

**Note: Attempt ALL the questions.**

- 9 (a) (i) Explain the magnetic and catalytic behaviours of 'd' –block elements.  
(ii) What do you mean by pseudohalogens? Compare the pseudohalogens with halogens.  

**OR**
  - (b) (i) Discuss the structure and redox properties of any two oxy acids of Nitrogen.  
(ii) What are polyhalides ions? Discuss the structures of  $ICl_2^-$ ,  $ICl_4^-$  &  $I_3^-$
- 10 (a) (i) Write the following chemical reactions on benzene with mechanism  
(A) Nitration (B) Friedel craft's acylation  
(ii) What are ring activating and ring deactivating groups? Explain with suitable examples.  

**OR**
  - (b) (i) Explain the mechanism and stereochemistry of  $SN^1$  reaction in alkyl halides.  
(ii) Give any two methods of preparations of alkyl benzenes.

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- 11 (a) (i) Derive Bragg's equation. Calculate the distance between two lattices from the following data:

$$\theta=26.42, \lambda=7.1 \text{ nm} (\sin 26.42^\circ = 0.045)$$

- (ii) Define and explain (a) space lattice (b) Lattice point (c) unit cell

**OR**

- (b) (i) State and explain Raoult's law. A solution containing 10g of a compound in 100 g of water lowers the V.P. from 17.50 mm of Hg to 17.41 mm of Hg at 20°C. Calculate the molecular weight of the compound.

- (ii) Describe an experimental method for determination of elevation in boiling point of a solution.

- 12 (a) (i) What are super conductors? Explain the characteristics properties of super conductors.

- (ii) Explain the principle involved in selection of an indicator in Acid-Base titrations.

**OR**

- (b) (i) Explain the bonding in metals by VBT.

- (ii) What are composites? Discuss different types of them.

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