Code No. 2005 / E

FACULTY OF SCIENCE

B.Sc. I – Year Examination, March / April 2016

Subject : CHEMISTRY

Paper – I

Time : 3 hours **Max. Marks : 100**

Part – A (4 X 15 = 60 Marks)
(Essay Answer Type)

Notre : Answer all questions, choosing any two bits from each question. Each bit carries 7 ½ marks.

1 a) Explain the diagonal relationship between Li and Mg.

b) Write the synthesis and structure of diborane.

c) Write the preparations and reactions of Hydrazine.

d) Write with suitable examples, how organometallic compounds are used in the preparation of the following.
i) Amines ii) Alcohols iii) Aldehydes iv) Ketones

2 a) What is mesomeric effect? Explain acidity of phenol.

b) Define Markownikov's rule and explain by taking a suitable example.

c) Draw all possible conformers of cyclohexane and explain their stability.

d) Write the preparation and mechanism of the following compounds from Benzene.

3 a) Discuss the critical state of gas. Derive the relationship between critical constants and Vander Waal's constants.

b) What are crystal defects? Explain Schottky and Frenkel defects.

c) What is critical solution temperature? Explain the critical solution temperature of i) Water-Phenol ii) Water-Triethylamine

d) Define physical and chemical adsorption and describe their differences.

4 a) Describe de Broglie's hypothesis and Heisenberg's uncertainty principle and mention their significance.

b) Draw the molecular orbital energy diagram of O_2 molecule. Explain its bond order and magnetic character.

c) Write a note on enantiomers and diastereomers.

d) Discuss the conformational isomerism of n-butane.

..2

Part – B (8 X 5 = 40 Marks)
(Short Answer Type)

Note : Answer all questions.

5 a) What is inorganic benzene? Explain the structure and hybridization in borazole.

OR

b) Write a brief note on graphitic compounds.

6 a) Classify oxides based on their chemical behaviour.

OR

b) Write about inter halogen compounds and write the structure of IF_7.

7 a) Classify the types of organic reagents with examples.

OR

b) What are alkanes? Why do they exhibit inertness.

8 a) Explain the acidic nature of acetylene.

OR

b) What is aromaticity? State Huckel's rule and explain with an example.

9 a) How are liquid crystals classified and explain?

OR

b) Write about n-type and p-type semiconductors. Give an application for each.

10 a) Write a note on azeotropic mixtures.

OR

b) What is an emulsifying agent? Explain its action with an example.

11 a) Write Schrodinger wave equation and explain various terms in it.

OR

b) Write the structure of BrF_5 molecule on the basis of valence bond theory.

12 a) Compare the bonding and antibonding molecular orbitals with an example.

OR

b) Write a note on common ion effect with suitable example.

******