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FACULTY OF SCIENCE

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

Subject : CHEMISTRY

Paper - I

Time: 3 hours

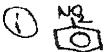
Max. Marks: 100

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
- i̇̃v) 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 O₂ molecule. Explain its bond order and magnetic character.
 - c) Write a note on enantiomers and diastereomers.
 - d) Discuss the conformational isomerism of n-butane.



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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 IF7.
- 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 BrF₅ 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.
