

2123  
B.Sc. (Hons.) Bio-Informatics  
First Semester  
BIN-1006: Chemistry – I

Max. Marks: 60

Time allowed: 3 Hours

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- Define electron affinity. Which halogen has maximum electron affinity?
- Write IUPAC names of  $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$  and  $[\text{Fe}(\text{CO})_5]$
- What is inductive effect? Give examples.
- What is osmotic pressure?
- Differentiate between ferromagnetic and anti-ferromagnetic compounds.
- Give one difference in ideal and non-ideal solutions. (6x2)

UNIT - I

- II. a) What is electronegativity? Write various factors affecting electronegativity of an atom.
- b) Draw and discuss the molecular orbital energy level diagram of  $\text{N}_2$  molecule. Discuss its magnetic properties. (6+6)
- III. a) What are stereo-isomers? Discuss in detail giving suitable examples.
- b) Draw and discuss the structures of  $\text{NH}_3$ ,  $\text{SF}_4$  and  $\text{CO}_3^{2-}$  on the basis of hybridization concept. (6+6)
- IV. a) What are singlet and triplet carbenes? Give examples and discuss their structures.
- b) Write a note on nucleophilic aromatic substitution reactions. (6+6)

UNIT - II

- V. a) Define optical activity and polarization. Give examples.
- b) Write a note on depression in freezing point and its determination. (6+6)

P.T.O.



(3)

- VI. a) Discuss various factors affecting rate of reaction.  
b) What is dipole moment? Discuss a method used to measure dipole moment. (6+6)
- VII. a) Discuss buffer action by taking a suitable example.  
b) Explain Arrhenius equation in detail. (6+6)

x-x-x