

2012
B.Sc. (Hons.) Bio-Informatics
First Semester
BIN-1006: Chemistry – I

Time allowed: 3 Hours

Max. Marks: 60

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

x-x-x

1. (a) How does electronegativity vary in the second period?
(b) Draw the optical isomers of $[\text{Co}(\text{en})_3]^{3+}$.
(c) What is benzyne mechanism?
(d) Give two limitations of valence bond theory.
(e) What is osmotic pressure? Give its expression.
(f) State Le-Chatelier principle.

(2 x 6)

UNIT I

2. (a) Discuss the type of isomerism shown by the metal complexes having coordination number 4.
(b) What is ionization enthalpy? Discuss the variation in first and second ionization enthalpy of alkali metals.
3. (a) Differentiate between hydrogen bonding and Vander Waals forces.
(b) Draw the structures of SF_6 , NH_3 and NO_3^- .
4. (a) Discuss SN^1 mechanism and stereochemistry of products by taking an example.
(b) Write a note on nucleophilic substitution in aromatic systems.

(6+6)

(6+6)

(6+6)

UNIT II

5. (a) Define ideal and non-ideal solutions. Draw various plots to show variation in ideal and non-ideal behavior of solutions.
(b) Discuss Raoult's law and its application to determine elevation in boiling point.
6. (a) What are permanent and induced electrical dipoles? Discuss with examples.
(b) Discuss diamagnetism and paramagnetism with examples.
7. (a) Discuss factors affecting rate of reaction.
(b) Explain Arrhenius equation giving details of various notations used in it.

(6+6)

(6+6)

(6+6)

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