(i) Printed Pages : 2 Roll No. .....

(ii) Questions : 7 Sub. Code : 0 9 9 3

Exam. Code : 0 0 3 9

B.Sc. (Hons.) Bioinformatics 1st Semester

(2122)

CHEMISTRY–I

Paper : BIN–1006

Time Allowed : Three Hours] **[Maximum Marks : 60**

Note :— Attempt **FIVE** questions in all by selecting **TWO** questions each from Unit I and II. Question No. 1 is compulsory.

(Compulsory Question)

1. (a) Why IE_2 of Mg is more than IE_1 ?

   (b) What is primary and secondary valency ? Give example.

   (c) Differentiate between electrophile and nucleophile.

   (d) Draw the resonance structure of CO_3^{2-}.

   (e) What is osmotic pressure ? Give its expression.

   (f) Discuss bonding in metal-carbonyl complexes. 2×6

UNIT—I

2. (a) Discuss the type of geometrical isomerism shown by MA_3B_3 and MA_4B_2 type complex.

   (b) Draw and discuss the molecular orbital energy level diagram for O_2 molecule. Calculate its bond order. 6+6

3. (a) Differentiate between Hydrogen bonding and van der Waals forces.

(b) Draw and discuss the structures of IF_7, PCI_3 and SO_4^{2-} on the basis of hydridization concept. 6+6

4. (a) Discuss SN^2 mechanism and stereochemistry of products by taking an example.

(b) What is hyperconjugation ? Discuss its application with the help of an example. 6+6

UNIT—II

5. (a) Define normality, molarity and molality. Give their units.

(b) Discuss Raoult's law and its application to determine depression in freezing. 6+6

6. (a) Differentiate between permanent and induced electrical dipoles.

(b) What is dipole moment ? How is it calculated ? Discuss by taking a suitable example. 6+6

7. (a) Discuss the effect of concentration and temperature on the rate of reaction.

(b) Explain Arrhenius equation in detail. 6+6