Exam.Code:0039
Sub. Code: 17993

2124

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. I which is compulsory and selecting two questions from each Unit.*

x-x-x

Q1. (a) Which element has maximum electron affinity among group 17? Why?

(b) Write IUPAC names of $[Co(NH_3)_3Cl_3]$ and $Na_3[Co(NO_2)_6]$.

(c) What are Vander Waals interactions? Give examples.

(d) Define normality and equivalent weight.

(e) What are paramagnetic and diamagnetic substances?

(f) What is pH? How is it measured? (6x2)

UNIT - I

Q2. (a) What is electronegativity? Discuss the effect of hybridization and oxidation state on electronegativity. Discuss the trends observed in electronegativity of elements along the 2^{nd} period.

(b) What are geometrical isomers? Draw the general structures of geometrical isomers possible in MA_4B_2 and MA_2B_2 type complexes (Where A and B are monodentate ligands). (6+6)

Q3. (a) List various postulates of valence bond theory. Draw and discuss the structures of $[Fe(CN)_6]^{3-}$ and $[Cr(NH_3)_6]^{3+}$.

(b) Draw and discuss the molecular orbital energy level diagram of O_2. What will happen to the bond order if it is reduced to O_2^{2-}?

(6+6)

Q4. (a) Write a note on carbocation. Discuss its structure and stability.

(b) Write a note on Benzyne mechanism. (6+6)

UNIT - II

Q5. (a) Explain depression in freezing point using Raoult's law?

(b) Write a note on osmotic pressure and its measurement.

(6+6)

P.T.O.

Q6. (a)What is dipole moment? Why dipole moment of CCl_4 is zero while $CHCl_3$ is non-zero?

(b) What is optical activity? Explain with the help of examples. (6+6)

Q7. (a) Explain Arrhenius concept of acids and bases giving examples.

(b) Explain Henderson Hasselbalch equation for a basic buffer. (6+6)

x-x-x