2053
B.Sc. (Hons.) Bio-Informatics
Second Semester
BIN-2005: Chemistry – II

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

I.    Attempt the following:-

   a)  Differentiate between a chromophore and auxochrome

   b)  What is Larmor precession

   c)  Explain the term Fugacity and Activity

   d)  What is decomposition potential?

   e)  Differentiate between isothermal and adiabatic processes.

   f)  State and explain second law of thermodynamics.                (6x2)

## UNIT - I

II.   a) Explain the following briefly:-

      i) Chemical potential

      ii) Hess's law

      iii) Gibbs free energy

   b) Derive an expression for calculation of work done in reversible isothermal expansion of an ideal gas.                (2x6)

III.  a) Discuss any three methods for prevention of corrosion.

   b) Derive Vant's Hoff reaction isotherm.                (2x6)

IV.   a) Write a complete note on overvoltage and polarization.

   b) Derive Nernst equation for measuring EMF of a cell.                (2x6)

P.T.O.

## UNIT - II

V.  a) Discuss phosphorescence and flurorescence.

b) What are selection rules in IR spectroscopy? Discus their use for predicting the number of IR active bands.                                    (2x6)

VI.  Discuss the following in NMR spectroscopy:-

   a)  Nuclear spin-spin interaction

   b)  Shielding and deshielding effects

   c)  Chemical shift and coupling constants                            (3x4)

VII.  Attempt the following:-

   a)  Write a note on extinction coefficient

   b)  Illustrate a brief introduction of Raman Spectra

   c)  What is principle of ESR spectroscopy                            (4,5,3)

x-x-x