

2072

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

1. (a) Differentiate between system and surroundings?
(b) What is corrosion? Explain its electrochemistry.
(c) Explain polarization.
(d) Give types of stretching vibrations with examples?
(e) What do you mean shielding and de-shielding in NMR?
(f) Give two differences between atomic and molecular spectroscopy?

(2 x 6)

UNIT I

2. (a) Derive an expression for work done in reversible isothermal expansion.
(b) Explain Hess's law with two examples.
(c) State first law of thermodynamics. Derive its mathematical expression.
(4,4,4)
3. (a) Calculate entropy change of ideal gas with change in pressure, volume and temperature.
(b) What is heat capacity at constant pressure and volume? Derive relation between the two.
(c) What are partial molar properties and chemical potential?
(4,4,4)
4. (a) Derive Nernst equation.
(b) Write a note on Calomel electrode giving its construction and working.
(6,6)

UNIT II

5. (a) Differentiate between fluorescence and phosphorescence.
(b) Write a detailed note on rotational Raman spectra.
(6,6)
6. (a) What do you mean by chemical shift? How is it calculated?
(b) Give important differences between NMR and ESR.
(6,6)
7. (a) What is Frank Condon principle? Discuss in detail.
(b) Write a note of Beer Lambert's Law. Discuss its limitations.
(6,6)

x-x-x