Bachelor of Science (B.Sc.) Semester–III Examination

BIOTECHNOLOGY BIOPHYSICAL TECHNIQUES–I

Optional Paper–II

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. (a) Draw a well labelled diagram of double beam spectrophotometer. 2½

(b) Explain Beer's law. 2½

(c) Explain absorption spectrum and its uses. 2½

(d) Define chromophore and auxochrome. 2½

OR

(e) Describe in brief the application of UV and Visible spectrophotometer. 5

(f) Give the derivation of Beer's law. Add a note on deviations from Beer's law. 5

2. Explain the principle, instrumentation and applications of Spectrofluorometry. 10

OR

(a) Explain flame photometry in detail. 5

(b) Give an account of Mass Spectrometry. 5

3. Describe thin layer chromatography in detail. 10

OR

Describe gel filtration chromatography and its application. 10

4. (a) Discuss the selection of ligand in affinity chromatography. 5

(b) Give the applications of Ion-exchange chromatography. 5

OR

(c) Describe different types of resins used in ion exchange chromatography. 5

(d) Give the applications of affinity chromatography. 5

5. Solve any **ten** :

(i) What is Lambda Max ? 1

(ii) What is a monochromator ? 1

(iii) What is electromagnetic radiation ? 1

(iv) Which wavelength is used to quantify protein in UV-spectrophotometry ? 1

(v) What is the source of radiation in IR spectrometer ? 1

(vi) What is the range of wavelength at which UV spectrophotometer is operated ? 1

(vii) Define Rf value. 1

(viii) Give any one example of stationary phase in column chromatography. 1

(ix) Define partition coefficient. 1

(x) What is the use of guard column in HPLC ? 1

(xi) What is the charge present on anionic resins ? 1

(xii) What is meant by specific elution ? 1