NKT/KS/17/5135

Bachelor of Science (B.Sc.) Semester—III (C.B.S.) Examination

BIOTECHNOLOGY (Biophysical Techniques—I)

Paper—II

Time : Three Hours] [Maximum Marks : 50

Note :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Describe in detail the instrumentation of UV-visible spectrophotometer. 10

OR

(a) Define Beer's law. Give the derivation of Beer's law. 2½

(b) Describe the concept of auxochromes and chromophores. 2½

(c) Differentiate between colorimeter and spectrophotometer. 2½

(d) Write a note on absorption spectrum.

2. (a) Describe the principle of IR spectrometry. 5

(b) Describe any three applications of UV-visible spectrophotometer. 5

OR

(c) Describe the principle and instrumentation of absorption flame-photometry. 5

(d) Describe the instrumentation of spectrofluorometry. 5

3. (a) Describe thin layer chromatography in detail. 10

OR

(b) Describe gel filtration chromatography in detail. 10

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

(b) Briefly describe HPLC. 5

OR

(c) Discuss the principle of ion exchange chromatography. 5

(d) Give the applications of affinity chromatography. 5

5. Solve any ***ten*** :

(i) Define extinction coefficient. 1

(ii) What is a monochromator ? 1

(iii) What is dual wavelength spectrophotometry ? 1

(iv) What is the role of nebulizer in emission flame-photometry ? 1

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

(vi) Name the three main components of mass spectrometer. 1

(vii) What is partition coefficient ? 1

(viii) Define R_f value. 1

(ix) Which is the stationary phase in paper chromatography ? 1

(x) What is a ligand ? 1

(xi) What is meant by elution in affinity chromatography ? 1

(xii) What is a cationic exchanger ? 1