NTK/KW/15 – 5850

Third Semester B. Sc. Examination

BIOTECHNOLOGY

Paper - II

(Biophysical Techniques–I)

Time : Three Hours] [Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. State and derive Beer's law. Discuss the deviations and limitations of this law.

OR

Describe the instrumentation and working of double beam spectrophotometer. 10

2. Discuss the principle, instrumentation and application of spectrofluorometry.

OR

Discuss the principle, instrumentation and applications of emission flame photometry. 10

3. (a) What is partition coefficient ? Give a brief account of paper chromatography. 5

(b) Discuss the applications of thin layer chromatography. 5

OR

(c) Write a note on column chromatography. 5

(d) Discuss the applications of gel filtration chromatography. 5

4. (a) Give the principle of ion exchange chromatography. $2\frac{1}{2}$

(b) Discuss the specific and nonspecific elution techniques of affinity chromatography. $2\frac{1}{2}$

(c) Write a note on high pressure liquid chromatography. $2\frac{1}{2}$

(d) Give the applications of ion exchange chromatography. $2\frac{1}{2}$

OR

Write a note on :—

(e) Types of resins used in ion exchange chromatography. $2\frac{1}{2}$

(f) Applications of affinity chromatography. $2\frac{1}{2}$

(g) Ligand attachment. $2\frac{1}{2}$

(h) Amino acid analyzer. $2\frac{1}{2}$

5. Solve any **ten** :—

(i) What is auxochrome ? 1

(ii) Name the source of uv radiation in uv visible spectro–photometer. 1

(iii) What is absorption maxima ? 1

(iv) State the principle of IR. 1

(v) Give one application of uv–visible spectrophotometer. 1

(vi) What is mass spectrometry ? 1

(vii) Name the materials used in thin layer chromatography. 1

(viii) State the nature of partition forces. 1

(ix) What is distribution coefficient ? 1

(x) Name the buffers commonly used in ion exchange chromatography. 1

(xi) Give one application of HPLC. 1

(xii) How are ligands selected ? 1