B.Sc. (CBCS Pattern) Sem-IV

011A - 12 - Biotechnology Paper-I : Biophysical Techniques

P. Pages : 2 **GUG/W/22/11994**

Time : Three Hours * 2 3 8 1 * Max. Marks : 50

---

1. Explain instrumentation and applications of UV-V is spectrophotometry. **10**

OR

a) Explain the concept of electromagnetic radiations. **2 ½**

b) What is the difference between spectrophotometer and calorimeter. **2 ½**

c) Give the information about Lambert and Beer's Law. **2 ½**

d) Write a note on chromophore. **2 ½**

2. Give detail account on Ion exchange chromatography. **10**

OR

a) Write a note on types of Ligands used in gel filtration chromatography. **2 ½**

b) Give brief accounts on types of gels used in chromatography. **2 ½**

c) Give the applications of gel filtration chromatography. **2 ½**

d) Discuss about paper chromatography. **2 ½**

3. Give an account on SDS-PAGE electrophoresis with its application. **10**

OR

a) Give brief account on factors affecting electrophoretic mobility. **2 ½**

b) Write a note on concept of RCF. **2 ½**

c) Write down the basic principle about centrifugation. **2 ½**

d) Describe differential centrifugation. **2 ½**

4. Give detail account on Geiger-Muller counter with its instrumentation. **10**

OR

a) Discuss the concept of Mass spectrometry. **2 ½**

b) Write a note on liquid scintillation counter. **2 ½**

c) Give the application of isotopes in biotechnology. **2 ½**

d) Describe advantages of isotopic tracer techniques. **2 ½**

5. Solve **any ten** of the following.

a) What is extinction coefficient. **1**

b) What is optical density? **1**

c) Which dye is used to visualize DNA bands in spectrophotometer. **1**

d) Name the ligands used in affinity chromatography. **1**

e) Give any two examples of gels used in gel filtration chromatography. **1**

f) What is distribution coefficient? **1**

g) Which charge present on DNA? **1**

h) What is centrifugal force? **1**

i) What is sedimentation coefficient? **1**

j) Name any two radioactive isotopes **1**

k) What is radioactivity? **1**

l) What is autoradiography? **1**

****