M.Sc. (Bio-Chemistry) (NEP Pattern) - Sem-I

01MSCBIC03 / STPG01BCH03 Major-03 - Tools and Techniques in Bioscience

P. Pages : 2 **GUG/W/24/16133**

Time : Three Hours * 7 4 2 6 * Max. Marks : 80

Note : All questions are compulsory and carry equal marks.

1. Discuss the ultrafiltration, freeze drying and fractional precipitation technique for purification of biocomponents. **16**

OR

a) Describe the methods for lysis of plant, animal and microbial cells. **8**

b) Explain the use of detergents in the isolation of membrane proteins. **8**

2. Discuss the principle and applications of gel filtration and gas chromatography technique. **16**

OR

a) Describe how molecular weight is determined by centrifugation technique. **8**

b) Give the applications of HPLC and reverse phase chromatography. **8**

3. Discuss the principle, technique and applications of polyacrylamide gel electrophoresis. **16**

OR

a) Describe the technique for the measurement of alpha, beta and gama radiations. **8**

b) Give the applications of tracer technique in biology. **8**

4. Discuss the principle and applications of UV-Visible and fluorescence spectroscopy. **16**

OR

a) Describe the principle and applications of scanning electron microscopy. **8**

b) Explain the principle of atomic absorption spectroscopy what are its applications? **8**

5. Attempt **any eight** of the following (2 marks). **16**

a) What are marker enzymes? What are their applications?

b) Give the methods of studying cells and organelles.

c) Give the general scheme for purification of biomolecules.

d) What are the different types of partition forces in chromatography?

e) Write a note on chromatofocusing.

f) What are the advantages of TLC over paper chromatography?

g) What is radiation dosimetry?

h) Write a note on Cerenkov radiation.

i) What is the application of pulse field gel electrophoresis?

j) Give the principle of phase contrast microscopy.

k) Add a note on mass spectroscopy.

l) Give the principle of optical Rotatory Dispersion Spectroscopy.

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