

M.Sc. Examination, 2016
Semester-I
Biotechnology
Course – IV
(Biotechniques and Instrumentation)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin.

Answer ***any four*** questions.

1. (a) Explain the working principle of absorption spectrophotometer based on Beer-Lambert law.
(b) Explain the working principle of NMR. What is the reference used in proton NMR and why? 5+5=10
 2. (a) Differentiate between soft and hard ionizations in mass spectroscopy.
(b) How is e/m ratio used in mass spectroscopy?
(c) Define the terminology: TOF and MALDI. 3+3+(2+2)=10
 3. (a) Briefly describe 2-D electrophoresis.
(b) What are the applications and limitations of this technology? 6+4=10
 4. (a) Describe HPLC. How does normal-phase HPLC differ from reversed-phased HPLC?
(b) Describe the principle structure and function of a pH Glass Electrode. 6+4=10
 5. (a) What do you mean by centrifugation? How does it differ from sedimentation?
(b) What do you mean by Relative Centrifugal Force (RCF)? How is it calculated?
(c) What are the principle and utility of density gradient centrifugation? (2+1)+2+5=10
 6. Write short notes on ***any four*** : 2.5×4=10
 - (i) Affinity chromatography
 - (ii) PFGE
 - (iii) Electrolysis and electrodes
 - (iv) cDNA Microarray
 - (v) Dichroic mirror
 - (vi) Disposal of radioactive laboratory waste
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