

2013

M.Sc.

3rd Semester Examination

BIOCHEMISTRY

PAPER—BIC-301

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer all questions.

1. Answer any five questions from the following : 2×5
 - (a) What is "relative centrifugal force" ?
 - (b) Write down the primary conditions for a nucleus to show NMR spectroscopy.
 - (c) Why is "disc electrophoresis" called so ?
 - (d) Why TMS is used as reference in H^1 NMR spectroscopy ?
 - (e) Cite an example of biological surfactants with its function.
 - (f) Write an use of affinity chromatography.
 - (g) In DNA sequencing technique, what type of gel is used in electrophoresis and why ?
 - (h) What is the approximate nucleolar weight of a protein, which has 160 amino acid residues ?

(Turn Over)

2. Answer any *two* questions from the following : 5×2
- (a) Briefly discuss the working principle of ion exchange chromatography.
 - (b) Discuss with schematic diagram of the 'hybridoma' technique.
 - (c) Describe different types of ELISA.
 - (d) What is pulsed-field gel electrophoresis and what is its advantage over one dimensional agarose gel electrophoresis ?
3. Answer any *two* questions from the following : 10×2
- (a) What is Bragg's Equation ? Write down the working principle of X-ray crystallography. 4+6
 - (b) Write down the sample preparation procedure to visualise inner structure of cells by freeze etching method. 10
 - (c) What do you mean by skeletal frequency and fingerprint frequency in IR spectroscopy ? How many frequency will be obtained from the IR spectra of CO₂ molecule ? Explain the result. 4+6
 - (d) Describe with principle, the steps of the 2-D-gel electrophoresis technique of proteins. How is the original rod gel step of isoelectric focussing replaced in modern days ? Explain the importance of the 2-D-gel electrophoresis technique in proteomic study. 6+1+3
-