

**S. Y. B. SC. (BIOTECHNOLOGY) SEM – IV (CBCS - 2015
COURSE) : SUMMER - 2018
SUBJECT : ANALYTICAL TECHNIQUES**

Day : **Monday**
Date : **16/04/2018**

Time **10.00 am to 01.00 pm**
Max. Marks : 60

S-2018-1057

N.B.

- 1) Q.1 and Q.5 are **COMPULSORY**.
- 2) Answer any **TWO** questions from Q.2, 3, & 4 in Section – I
- 3) Answer any **TWO** questions from Q.6, 7, & 8 in Section – II.
- 4) Answers to both the sections should be written in **SEPARATE** answer book.
- 5) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1** Attempt any **FIVE** of the following: **(10)**
- a) What is back washing of HPLC?
 - b) Draw PFD (Process Flow Diagram) for general waste water treatment.
 - c) What is cross flow filtration?
 - d) Define nutraceuticals.
 - e) What are the different types of membrane filtration?
 - f) Which isotopes are used in NMR?
- Q.2** Answer the following: **(10)**
- a) Explain the principle and application of density gradient centrifugation.
 - b) Prepare a comparative table for various membrane separation techniques.
- Q.3** Answer the following: **(10)**
- a) List different types of chromatography techniques. Describe the process of purification of proteins in detail.
 - b) What is TCD (Thermal Conductivity Detector)? Explain its significance.
- Q.4** Write short notes on: **(10)**
- a) MALDI-TOF
 - b) Lypophilization

SECTION - II

- Q.5** Attempt the following questions; **(10)**
- a) What are radioimmuno assays? Add a note on carbon dating.
 - b) Describe principle and applications of Atomic force microscopy (AFM).
- Q.6** Answer the following; **(10)**
- a) Explain factors affecting gas chromatography with its applications.
 - b) Discuss the various applications of electrophoresis in Biotech and pharmaceutical industries.
- Q.7** Answer the following; **(10)**
- a) Describe dialysis technique.
 - b) Explain principle of nuclear magnetic resonance (NMR).
- Q.8** Answer in brief: **(10)**
- a) What is Ramchandran plot? Give its significance.
 - b) Explain principle of High Performance liquid chromatography (HPLC).

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