



JBG-1603120202010100 Seat No. _____

M. Sc. (Biochemistry) (Sem. I) (CBCS) Examination

December - 2019

IBC - 1 : Analytical Techniques

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : All questions are compulsory. Support your answers with suitable illustrations wherever required.

1 Answer briefly any **seven** of the following : 14

- (1) Define any two parameters which are used for expressing an electromagnetic radiation.
- (2) Enumerate the factors affecting fixation.
- (3) What is major difference between dye and stain?
- (4) Explain the selection rule and Hooke's law in IR Spectroscopy.
- (5) Explain Magic-T with diagram
- (6) Explain the mechanism of absorption of the NMR radiofrequency.
- (7) Differentiate between HPLC and GC.
- (8) Give the schematic representation of the Mass Spectrometer. Mention the names of the mass analyzers used.
- (9) What is the basic principle of IR Spectroscopy?
- (10) What is the role of glycerol, mercaptoethanol and SDS in loading buffer of PAGE.
- (11) Explain the factors affecting the IR band.
- (12) How Electrophoretic techniques are classified?
- (13) Explain in brief: agarose gel electrophoresis.
- (14) How RPM is calculated from g value?

- 2** Answer any **two** of the following : **14**
- (1) Describe the types of the bond vibrations which are responsible for the absorption of the IR radiations.
 - (2) Explain Cell membrane Fractionation with any one centrifugation technique.
 - (3) Explain the principle of fluorescence microscopy.
- 3** Answer the following :
- (A) What is Cotton effect? Describe the different types of curves used for describing the cotton effect. **7**
 - (B) Enlist and describe different ionization techniques in Mass Spectrometry. **7**
- OR**
- 3** Answer the following :
- (A) Enlist detectors of UV Spectroscopy. Explain any two with sketch. **7**
 - (B) Explain Sample Illumination System of Raman spectroscopy. Advantage/ Disadvantages of Raman over IR. **7**
- 4** Answer the following : **14**
- (A) Write a short note on: Ion Exchange chromatography
 - (B) Explain PAGE including general, advantages, Disadvantages, Types, Procedure.
- 5** Write comments on any **two** of the following : **14**
- (1) Explain Cell membrane Fractionation with any one centrifugation technique
 - (2) Explain the instrument of HPLC in detail.
 - (3) Sketch and explain instrumentation of electrophoresis.
 - (4) Explain Principle and working of scanning electron microscopy.