

Roll No.

Total No. of Pages : 02

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**B.Sc. (Microbiology) (Sem.-4)**  
**ANALYTICAL TECHNIQUES IN MICROBIOLOGY**

Subject Code : BSMB407-20

M.Code : 92105

Date of Examination : 13-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

1. Write briefly :

- a. Ion Exchange Chromatography.
- b. Enlist the factor affecting sedimentation velocity.
- c. Write the types of rotors.
- d. Write equation for beer-Lambert Law.
- e. Principle of UV spectroscopy.
- f. What is a chemical shift?
- g. Enlist the detector used in NMR spectroscopy.
- h. What is Raman Effect?
- i. What is Molecular polarizability?
- j. Write the principle of gel electrophoresis.

### SECTION-B

2. Write down the principle and methods of TLC.
3. Define centrifugation. Write a note on gel electrophoresis.
4. Write principle and procedure of mass spectroscopy.
5. Write briefly on instrumentation of NMR spectroscopy.
6. Write a note on paper chromatography.

### SECTION-C

7. Write principle and method of x-ray spectroscopy.
8. Write about followings :
  - a. Isoelectric focusing of protein
  - b. Hyperfine splitting.
9. Write in detail 3D electrophoresis and pulse gel electrophoresis.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**