

Enrollment No: \_\_\_\_\_

Exam Seat No: \_\_\_\_\_

# C. U. SHAH UNIVERSITY

## Winter Examination-2021

Subject Name : Biochemical and Biophysical Techniques

Subject Code : 5SC03BBT1

Branch: M.Sc. (Microbiology)

Semester: 3

Date: 16/12/2021

Time: 02:30 To 05:30

Marks: 70

### Instructions:

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
- 

### SECTION – I

**Q-1**                      **Attempt the Following questions**                      **(07)**

- a. What is SiRNA
- b. What is DNA library?
- c. What is function of  $\beta$  mercapto-ethanol in SDS PAGE?
- d. Expand TEMED.
- e. Define refractive index.
- f. What is Gas Chromatography used for?
- g. Write the equation of Numerical Aperture.

**Q-2**                      **Attempt all questions**                      **(14)**

- a. What is DNA library? Write detail note on cDNA library construction.                      **(7)**
- b. Explain briefly the theory of electrophoresis. Explain the working principle of 2D PAGE.                      **(7)**

**OR**

**Q-2**                      **Attempt all questions**                      **(14)**

- a. Write detail note on isolation and purification of microbial protein.                      **(6)**
- b. Write working principle of Scanning and Transmission electron microscope                      **(4)**
- c. Write detail note on IEF with application.                      **(4)**

**Q-3**                      **Attempt all questions**                      **(14)**

- a. Write detail note on electrophoretic separation of protein (any one)                      **(6)**
- b. Write difference between Native and SDS PAGE.                      **(4)**
- c. Write detail note on Gel Filtration method.                      **(4)**

**OR**

**Q-3**                      a. Explain the working principle of Confocal microscope. Also draw a                      **(7)**



labelled diagram of it depicting its functional parts.

- b. Discuss the principle, method and application of Density gradient centrifugation. (7)

## SECTION – II

**Q-4 Attempt the Following questions (07)**

- a. Define buffer
- b. Define sedimentation
- c. Expand RAPD
- d. Define electrophoretic mobility
- e. Give the equation of Rf value.
- f. What is electrophoresis?
- g. What is Pyrosequencing

**Q-5 Attempt all questions (14)**

- a. Discuss the principle, instrumentation and application of HPLC. (6)
- b. What is chromatography? Give detail note on separation of molecule by TLC (4)
- c. What is RAPD? Write a detail note on RAPD (4)

**OR**

**Q-5 Attempt all questions**

- a. Discuss the principle of MPSS (7)
- b. Write a note explaining the various components of a Mass spectroscopy (7)

**Q-6 Attempt all questions (14)**

- a. Compare between RFLP and AFLP. Explain mechanism of any one technique stated above. (7)
- b. What is Genomic library? Explain the process of Genomic library construction. (7)

**OR**

**Q-6 Attempt all Questions**

- a. Explain Second generation DNA sequencing. Compare it with traditional methods of DNA sequencing. (6)
- b. What is Antisense and RNAi technology? (4)
- c. Explain the principle behind the X Ray spectroscopy (4)

