

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Biochemical and biophysical techniques

Subject Code: 5SC03BBT1

Branch: M.Sc (Microbiology)

Semester: 3

Date: 04/12/2018

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.
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SECTION – I

- Q-1 Attempt the Following questions (07)**
- a. Which method is commonly used for the separation of DNA by electrophoresis?
 - b. What is function of β mercaptoethanol in SDS PAGE?
 - c. Give the example of tracking dyes used in SDS PAGE.
 - d. Expand TEMED.
 - e. Define ampholyte.
 - f. Define refractive index.
 - g. Write the equation of Numerical Aperture.
- Q-2 Attempt all questions (14)**
- (a) Draw the schematic diagram of UV-VIS spectrometer and explain instrumentation. (7)
 - (b) Discuss the principle, instrumentation and application of HPLC. (7)
- OR**
- Q-2 Attempt all questions (14)**
- (a) Explain briefly the theory of electrophoresis. Explain the working principle of 2D PAGE. (7)
 - (b) What is electron microscopy? How is contrast generated in specimens of electron microscopy? Compare magnification and resolution of electron microscopy and light microscopy. (7)
- Q-3 Attempt all questions (14)**
- (a) Describe the Maxam-Gilbert procedure of DNA sequencing (7)
 - (b) Discuss the principle of centrifugation. Explain the factors that affect sedimentation rate in centrifugation. (7)
- OR**
- Q-3 (a) Differentiate between Genomic library and cDNA library. Explain the importance of cDNA library in rDT (7)**
- (b) Discuss the principle of MPSS (7)**



SECTION – II

- Q-4** **Attempt the Following questions** **(07)**
- a. Define buffer
 - b. Define sedimentation
 - c. Expand TEM
 - d. Define magnification
 - e. Expand RPM
 - f. Define electrophoretic mobility
 - g. Give the equation of R_f value.
- Q-5** **Attempt all questions** **(14)**
- (a) Write a note on Beer –Lambert law. **(7)**
 - (b) Discuss the principle, method and application of Density gradient centrifugation. **(7)**

OR

- Q-5** (a) IEF is based on the principle of pI. Explain **(7)**
- (b) Explain the working principle of Confocal microscope. Also draw a labelled diagram of it depicting its functional parts. **(7)**

- Q-6** **Attempt all questions** **(14)**
- (a) Write a note explaining the various components of a Mass spectroscopy. **(7)**
 - (b) Write the principle of TLC. Explain its various components for separation of any compound by TLC. **(7)**

OR

- Q-6** **Attempt all Questions**
- (a) Compare between RFLP and AFLP. Explain mechanism of any one technique stated above. **(7)**
 - (b) Explain Second generation DNA sequencing. Compare it with traditional methods of DNA sequencing. **(7)**

