(i) Printed Pages: 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0160

Exam. Code : 0002

B.A./B.Sc. (General) 2nd Semester

1059

BIO-CHEMISTRY

Paper—A : Biochemical Techniques

Time Allowed : Three Hours] **[Maximum Marks : 45**

Note :— Attempt ***five*** questions in total including question **1**, which is compulsory. Attempt ***one*** question from each of the Unit I to Unit IV.

1. Compulsory question. Answer in **3-4** lines.

(i) What is absorptivity and its unit ?

(ii) What is colorimetry ?

(iii) What is Job's effect ?

(iv) What is pI ?

(v) What is an ampholyte ?

(vi) What is isopycnic centrifugation ?

(vii) Convert 10,000 rpm in to RCF value if the diameter of a straight rotor is 20 cm.

(viii) What is the function of SDS in SDS-PAGE ?

(ix) What is a void volume of a gel permeation column ?

1×9

UNIT—I

2. (a) What is Beers and Lamberts Law ? Describe its major limitation.

   (b) Draw schematic diagram of a spectrophotometer, label its parts and describe their important functions.

   (c) What is front-face fluorescence spectroscopy ? 4,3,2

3. (a) What is the difference between colorimetry and UV spectroscopy ?

   (b) What is infrared spectroscopy ? Write its principle and application in biological sciences.

   (c) What is the principle of fluorescence spectroscopy ? Describe its applications in detail. 2,3,4

UNIT—II

4. (a) What is underlying principle of chromatography ? Describe the gel permeation chromatography in detail with the help of schematic diagram(s).

   (b) What are anion and cation exchangers ? Explain with suitable examples.

   (c) What is the function of thermionic, N-P and electron capture detector(s) in GLC ? 4,2,3

5. (a) What is reverse-phase chromatography ? Describe its principle and matrices in detail. 3

   (b) Write short notes on any ***two*** of the following :

   (i) Paper chromatography

   (ii) Thin layer chromatography

   (iii) Ion exchange chromatography. 3×2=6

UNIT—III

6. (a) What is a preparative centrifugation ? Describe various types of preparative centrifuges and their applications.

   (b) What are angular, straight and swing bucket rotors and their applications in centrifugation ?

   (c) What is RCF ? How is it determined ? 4,3,2

7. (a) What is an analytical ultracentrifuge ? Draw a schematic diagram, label its parts and describe their functioning.

   (b) What is density gradient centrifugation ? Describe its important applications. 6,3

UNIT—IV

8. (a) Who gave the concept of electrophoresis ? Describe free-flow electrophoresis in detail. 3

   (b) Write short notes on any ***two*** of the following :

   (i) Native Page

   (ii) DNA submarine electrophoresis

   (iii) Pulse field electrophoresis. 3×2=6

9. (a) What is 2D electrophoresis ? Write its principle and method in detail. 3

   (b) Write short notes on any ***two*** of the following :

   (i) Rocket immunoelectrophoresis

   (ii) SDS-PAGE

   (iii) Counter current immunoelectrophoresis. 3×2=6