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

(ii) Questions : 9 Sub. Code : 0160

Exam. Code : 0002

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

## (2042)

## BIO-CHEMISTRY

## (Biochemical Techniques)

## Paper–A

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

**Note :**—Attempt **five** questions in all, including Question No. **1** which is compulsory. Attempt **one** question each from each of Unit I to Unit IV.

I. Compulsory question. Answer in **3-4** lines :

(i) What is stray light and its implication in colorimetry ?

(ii) What is a Nicol prism and its function ?

(iii) What is the function of Protein A-cellulose in affinity chromatography ?

(iv) What is an effective partition coefficient ?

(v) Which gases are used as mobile phase(s) in GLC ?

(vi) Which is RCF ?

(vii) What is a Svedberg (S) ?

(viii) What is the function of guard column in HPLC ?

(ix) What is an ampholyte ? 1×9=9

## UNIT–I

II. (a) What is spectroscopy ? Briefly describe the relationship between absorbance and transmittance in this technique.

(b) What is Beers and Lambert Law ? Describe its major limitations and how they can be overcome in practice. 4,5

III. (a) What is colorimetry ? Describe its principle and application(s) in determining concentration of proteins and DNA in lysed bacterial cell suspension.

(b) What is IR spectroscopy ? Describe its principle and applications in biological sciences. 5,4

## UNIT–II

IV. (a) What is paper chromatography ? Describe its underlying principle, procedure and major applications.

(b) What is anion-exchange chromatography ? Describe its principle and steps involved in regeneration of the exchange matrix. 4,5

V. (a) What is GLC ? Describe its principle and working in detail. 3

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

(i) HPLC

(ii) TLC

(iii) Molecular sieving chromatography. 3×2=6

## UNIT–III

VI. (a) What is RCF and its relationship with rpm of a rotor ? Describe the use(s) of swing bucket, straight and an angular rotor in biological sciences.

(b) What is the major difference between rate zonal and isopycnic centrifugation ? How isopycnic centrifugation is useful in separation of virus particles ?

(c) What is caesium chloride? Describe its role in separation of plasmids. 4,3,2

VII. (a) What is sedimentation coefficient and its significance ?

(b) What is an ultracentrifuge ? Draw schematic diagram(s) of an analytical centrifuge, label its parts and describe their important functions. 4,5

## UNIT–IV

VIII. (a) What is free-flow electrophoresis ? Describes its principle and advantages, if any. 3

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

(i) Native PAGE

(ii) Rocket immune-electrophoresis

(iii) Agarose gel electrophoresis. 3×2=6

IX. (a) What is *iso*-electrophoresis ? Describe its principle and procedure in detail. 3

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

(i) Southern blotting

(ii) SDS-PAGE

(iii) Electro elution. 3×2=6