

Bachelor of Science (B.Sc.) Semester—IV Examination
BIOTECHNOLOGY (BIOSTATISTICS & BIOPHYSICAL TECHNIQUES—II)
Optional Paper—II

Time : Three Hours]

[Maximum Marks : 50

Note :— ALL questions are compulsory and carry equal marks.

1. Describe in detail Column Gel Electrophoresis. 10

OR

Describe in detail Paper Electrophoresis. 10
2. Describe in detail Pulsed-Field gel electrophoresis. 10

OR

Describe in detail Isoelectric Focussing and its applications. 10
3. (a) Describe in brief the working of Geiger-Muller Counter. 5
(b) Write a note on Mass Spectrometry. 5

OR

(c) Explain Liquid Scintillation Counters. 5
(d) Give any two applications of isotopes in Biotechnology. 5
4. Write notes on :
(a) Differential Centrifugation. 2½
(b) Ultracentrifuge. 2½
(c) Standard Deviation. 2½
(d) Applications of Preparative Centrifuges. 2½

OR

(e) Density Gradient Centrifugation. 2½
(f) Sedimentation velocity technique for determination of molecular weight. 2½
(g) Standard error. 2½
(h) RCF. 2½
5. Write any *ten* of the following :
(i) What is High Voltage Electrophoresis ? 1
(ii) What is Electrophoretic Mobility ? 1
(iii) Name any one factor affecting electrophoretic mobility. 1
(iv) Give one application of SDS-PAGE electrophoresis. 1
(v) What is the full form of SDS-PAGE ? 1
(vi) What is isoelectric point ? 1
(vii) Name any two stable isotopes used in biology. 1
(viii) What is autoradiography ? 1
(ix) What is Cerenkov radiation ? 1
(x) What is the 'g' value at which mitochondrial fraction can be separated ? 1
(xi) Define Svedberg Unit. 1
(xii) Define Mode. 1

NRT/KS/19/2132

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Note :— (1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. Describe in detail cellulose-acetate electrophoresis. 10

OR

Describe in detail slab gel electrophoresis. 10

2. Describe the principle, procedure and applications of isoelectric focussing. 10

OR

Give a detailed explanation of pulsed-field gel electrophoresis. 10

3. Write notes on :

(a) Liquid scintillation counter. 5

(b) Ionization chamber. 5

OR

Discuss the principle of isotopic tracer technique in metabolic studies. 10

4. Describe mean, mode and median with suitable examples. 10

OR

Write a detailed note on density gradient centrifugation. 10

5. Solve any **ten** of the following :

(i) Name any one factor affecting electrophoretic mobility. 1

(ii) Name the tracking dye used in gel electrophoresis. 1

(iii) What is the role of TEMED in polyacrylamide gel preparation ? 1

(iv) What is the full form of SDS ? 1

(v) Give any one application of SDS-PAGE. 1

(vi) What is meant by isoelectric pH ? 1

(vii) Define curie. 1

(viii) What is a negatron ? 1

(ix) What is dead time in GM counter ? 1

(x) What is standard error ? 1

(xi) What is RCF ? 1

(xii) What is Svedberg unit ? 1