Bachelor of Science (B.Sc.) Semester—V Examination

MOLECULAR BIOLOGY AND BIOINSTRUMENTATION

Optional Paper—3

(Microbiology)

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **All** questions are compulsory and carry equal marks.
(2) Draw diagram wherever necessary.

1. Discuss mechanism of induced mutation in detail. 10

OR

Explain the operon concept and write in detail on lac operon. 10

2. (a) Give a brief account on T_n3. 2½
(b) Define transformation and describe Griffith experiment. 2½
(c) Define F^+, F′ and Hfr. 2½
(d) Write a note on generalized transduction. 2½

OR

(e) Explain Lederberg and Tatum experiment. 2½
(f) Write a note on specialized transduction. 2½
(g) Describe the role of competence during transformation. 2½
(h) Write a note on basic concept of recombination. 2½

3. (a) Enlist types of centrifuges and describe density gradient centrifugation. 5
(b) Discuss working of UV-Visible spectrophotometer. 5

OR

(c) Describe agarose gel electrophoresis. 5
(d) Explain the derivation of Beer-Lambert's Law. Give its limitations. 5

4. Describe principle and mechanism of HPLC in detail. 10

OR

What are radioactive isotopes ? Explain liquid scintillation counter in detail. 10

5. Solve any **TEN** :
(i) Define Muton and Cistron. 1
(ii) What is split gene ? 1
(iii) What is meant by genetic suppression ? 1
(iv) What is merozygote ? 1
(v) Define Episome. 1
(vi) What is synapsis ? 1
(vii) What is Svedberg unit ? 1
(viii) What is TEMED ? 1
(ix) What is full form of RCF ? 1
(x) Give the names of any two stable isotopes. 1
(xi) Define anion exchanger. 1
(xii) Name the unit of measure for radioactivity. 1