

2025

M.Sc. 3rd Semester Examination

MICROBIOLOGY

Paper : MCB - 302

(Genetic Engineering)

Full Marks : 25

Time : One Hour

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any two questions.

2×2=4

1. Write the principle of N-terminal amino acid sequencing by the Edman degradation method.
2. Mention the mode of action of DNA ligase. How do bacteria protect their own DNA from the action of the restriction enzyme?
3. Write the differences between Sanger's manual and the automated method of DNA sequencing.
4. Write two salient features of p^{BR 322}.

P.T.O.

(2)

Group - B

Answer any *two* questions.

4×2=8

5. (a) Name the methods of converting the first strand to the second strand of cDNA.
(b) Write schematically the screening of a cDNA library using an antibody. 1+3
6. (a) How is DNA labelled radioactively by the nick translation method?
(b) Which compounds are used to label DNA by non-radioactive methods? 3+1
7. (a) What is RT-PCR, and mention two uses of RT-PCR?
(b) Write the principle of real-time PCR using SYBR-green dye. 2+2
8. (a) Write the steps in performing northern blot analysis.
(b) How does gene expression analysis by northern blot analysis differ from cDNA microarray? 3+1

Group - C

Answer any *one* question.

8×1=8

9. (a) Distinguish between a cloning vector and an expression vector.

(3)

(b) Describe with a schematic diagram the production of recombinant insulin in *E. coli*.

(c) What is molecular probe? 2+5+1

10. (a) Describe one method of DNA-protein interaction.

(b) Write the steps involved in performing DNA fingerprinting. 4+4

Internal Assessment : 5 marks
