



Seat No. \_\_\_\_\_

**HB-003-1194003**

**M. Sc. (Sem. IV) (CBCS) Examination**

**April - 2023**

**Microbiology : MICRO-421**

*(Biomolecular Engineering)*

**Faculty Code : 003**

**Subject Code : 1194003**

Time :  $2\frac{1}{2}$  Hours / Total Marks : 70

- 1** Answer the following (Any Seven, Each of 02 Marks) **14**
- (1) Enlist forces involved in the tertiary structure of a protein.
  - (2) Which functional groups of amino acids form a peptide bond in protein ?
  - (3) Define Domain.
  - (4) What are molecular chaperones ?
  - (5) What is codon bias ?
  - (6) Enlist the steps involved in PCR.
  - (7) Define gene shuffling.
  - (8) Give the principle of pyro sequencing.
  - (9) Define recombinant clones.
  - (10) Define gene library.
- 2** Answer the following (Any Two, Each of 07 Marks) **14**
- (a) Write a note on the role of secondary structure of a protein in protein function.
  - (b) Describe peptide geometry in detail.
  - (c) Explain domain and topology with reference to the catalytic action.

- 3** Answer the following (each of 07 Marks) **14**
- (a) What is protein folding ? Describe.
  - (b) What are molecular chaperones ? Explain its cellular functions.

**OR**

- 3** Answer the following (each of 07 Marks) **14**
- (a) Describe in vitro protein folding and its biotechnological significance.
  - (b) Explain molecular chaperone-assisted protein folding.
- 4** Answer the following (each of 07 Marks) **14**
- (a) Describe different methods of protein engineering.
  - (b) Explain evolution and mutators strain in detail.
- 5** Answer the following (Any Two, each of 07 Marks) **14**
- (a) What is Real-Time PCR ? Explain.
  - (b) Provide an account on strategies for primer designing for known and unknown sequences.
  - (c) Write a short note on next-generation sequencing.
  - (d) Write a short note on molecular tagging of the expressed protein.
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