



**PT-003-1194003**

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

**M. Sc. (Microbiology) (Sem. IV) (CBCS)  
(W.E.F. 2016) Examination**

**August - 2020**

**Bimolecular Engineering : Paper - 421  
(Elective - I)**

**Faculty Code : 003**

**Subject Code : 1194003**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**Instruction :** All questions are compulsory. Provide suitable illustrations where necessary.

- 1 Answer Any **Seven** : (2 Marks each) 14
- (a) Why should we change/modify the macromolecules ?
  - (b) How tertiary structure of a protein differs from that of the quaternary structure ?
  - (c) Enlist basic approaches of the protein engineering.
  - (d) What are soluble and insoluble fractions of the enzymes under cellular conditions ?
  - (e) How the inclusion bodies are significant in recombinant DNA Technology ?
  - (f) What is the basic difference between Real Time PCR and rest of the PCR ?
  - (g) Enlist various methods of screening the recombinant clones.
  - (h) What is the significance of co-expression of genes in recombinant DNA Technology ?
  - (i) What is the significance of molecular tagging ?
  - (j) State how the fidelity of the PCR can be altered ?

- 2** Write comments on Any **Two** : **7×2=14**
- (a) Molecular forces necessary to stabilize various structures of a protein.
  - (b) Family shuffling and Error-Prone PCR in gene shuffling.
  - (c) *In-vitro* protein folding.
- 3** Write comments : (7 marks each) **14**
- (a) Protein folding and molecular chaperones
  - (b) Various methods of PCR and their significance
- OR**
- 3** Comment on : (7 marks each) **14**
- (a) Molecular cloning and gene library
  - (b) Methods and significance of construction of the chimeric genes
- 4** Write comments : (7 marks each) **14**
- (a) Directed evolution : The concept and Methods
  - (b) Various *in-vivo* strategies to promote solubilization of the expressed protein
- 5** Write comments on Any **Two** : (7 marks each) **14**
- (a) Strategies for primer designing
  - (b) DNA sequencing: New Approaches
  - (c) Metagenomic Library
  - (d) Overlapping PCR and its significance
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