



**NBW-003-019403** Seat No. \_\_\_\_\_

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

**April / May - 2017**

**Micro - 421 : Biomolecular Engineering**

*(Elective)*

**Faculty Code : 003**

**Subject Code : 019403**

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

[Total Marks : 70

**1 Answer the following : (any Seven) 7×2=14**

- (a) Enlist various forces that contribute towards folding of a polypeptide chain.
- (b) Define a peptide bond.
- (c) Discuss what are different secondary structures formed during protein folding.
- (d) Highlight significance to secondary structures in protein function.
- (e) What are heat shock proteins? Explain with examples.
- (f) What are inclusion bodies?
- (g) Enlist various methods for protein engineering.
- (h) What is directed evolution of protein?
- (i) What is a gene library? Highlight its significance.
- (j) What is a molecular tag? Explain with example.

**2 Answer the following : (any Two) 2×7=14**

- (a) Describe the role of secondary structures in overall protein functionality.
- (b) Give a general account on peptide geometry.
- (c) Explain various forces that contribute towards stable protein geometry.

**3** Answer the following : **2×7=14**

- (a) Write a detailed note on in-vitro protein folding.
- (b) Various molecular chaperons and their cellular functions.

**OR**

- (a) Write a detailed note on chaperon-assisted protein folding.
- (b) Role of Heat shock proteins in protein folding and biotechnological significance.

**4** Answer the following : **2×7=14**

- (a) Describe methods used in protein engineering for screening novel traits.
- (b) Write detailed note on chimeric proteins.

**5** Write short notes on : (any **Two**) **2×7=14**

- (a) Applications of PCR in modern day biology.
- (b) Primer designing and its applications.
- (c) Basic principle and modern approach for DNA sequencing.
- (d) Over-expression of protein and methods for its assessment.

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