

**MSC4bioE0111**      **Seat No: \_\_\_\_\_**  
**M.Sc. Semester - 4 (CBCS) Examination**  
**March/April- 2018**  
**BIOMOLECULAR ENGINEERING**  
**(ELECTIVE - 1)**

**Time: 2:30 Hours**

**Marks: 70**

**Instructions:**

1. All questions are compulsory.
  2. Figures to the right indicate marks.
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- Que-1    Answer Any Seven (2 Marks each) (14)
- (a)    What are various levels of the protein in structures ?
  - (b)    Why amino acids are referred as Zwitter Ions ?
  - (c)    What is beta sheet in protein molecule ?
  - (d)    What is protein folding ?
  - (e)    Comment on the over expression of a gene.
  - (f)    What are the insoluble fractions of the expressed during the over expression ?
  - (g)    What is the Real Time PCR ?
  - (h)    What are various objectives of the protein engineering ?
  - (i)    What is molecular breeding ?
  - (j)    Can we create a protein with the combination of properties which never exist in nature ?  
Comment.
- Que-2    Write detailed comment on Any Two of the following. (14)
- (a)    Geometry of the peptides linkage.
  - (b)    Quaternary structures of the protein.
  - (c)    Tertiary structures of the protein.
- Que-3    Write detailed comments on : (7 Marks each). (14)
- (a)    Molecular chaperones and protein folding.
  - (b)    construction and significance of the of the chimeric genes.
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- Que-3    Answer the following (7 marks each).
- (a)    Discuss directed evolution in the light of sequence optimization.
  - (b)    What are various methods of PCR ? Highlight their significance in molecular biology and diagnostics.
- Que-4    Answer the following (7 marks each). (14)
- (a)    How inclusion bodies are formed during over expression of a gene ? Disuses various strategies to prevent it.
  - (b)    Discuss the significance and various methods of in-vitro protein folding.
- Que-5    Write comments on Any Two (7 marks each). (14)
- (a)    Genetic heterogeneity and protein engineering.
  - (b)    DNA sequencing and its significance.
  - (c)    Site directed mutation and protein engineering.
  - (d)    Methods of the Primer designing.

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