PROTEOMICS & PROTEIN ENGINEERING (SEMESTER - 8)

CS/B.TECH (BT)/SEM-8/BT-803A/09

1. .....
Signature of Invigilator

2. .....
Signature of the Officer-in-Charge

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

CS/B.TECH (BT)/SEM-8/BT-803A/09

ENGINEERING & MANAGEMENT EXAMINATIONS, APRIL – 2009

PROTEOMICS & PROTEIN ENGINEERING (SEMESTER - 8)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B			Group – C			***Total Marks***	***Examiner's Signature***
Question Number																		
Marks Obtained																		

.....
Head-Examiner/Co-Ordinator/Scrutineer

8856 A/E (25/04)

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ENGINEERING & MANAGEMENT EXAMINATIONS, APRIL – 2009

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GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) Codon-anticodon interaction occur by

a) covalent bonds b) electrostatic bonds

c) hydrogen bonds d) hydrophobic bonds. ☐

ii) Which of the following is *not* an example of post-translational modification of proteins ?

a) Glycosylation

b) Disulphide bond formation

c) Polyadenylation

d) Protein folding. ☐

iii) What is PEST sequence ?

a) Proline, Glutamic acid, Serine and Threonine

b) Proline, Ethylamine, Serine, Threonine

c) Proline, Glutamin, Serine, Threonine

d) None of these. ☐

iv) What are inteins ?

a) External or internal segments of proteins that are removed by proteolysis resulting in an active protein.

b) External segments of proteins that are added to other proteins by protein ligase.

c) Internal segments of proteins that are removed after translation with the external segments becoming linked together.

d) External segment of proteins that are covalently attached to lipids for membrane insertion. ☐

v) Which is not a ion source in mass spectrometry ?

a) ESI b) MALDI

c) FAB d) TOF. ☐

vi) The direction of protein synthesis is

a) *N* terminus to *C* terminus b) *C* terminus to *N* terminus

c) 5' to 3' d) 3' to 5'. ☐

vii) In forward genetics, the basic genetic underpinning is

a) phenotype to sequence

b) sequence to phenotype

c) disruption of a gene or a gene product followed by modification

d) all of these. ☐

viii) Protease inhibitors are known as peptidomimetic drugs because of their

a) imitation of natural peptide substrates

b) imitation of the Gag-Pol polyprotein

c) imitation of other inhibitor complexes

d) all of these. ☐

ix) An exception to parenteral administration of a drug is platelet derived growth factor (PDGF) (for ulcer). What form of drug delivery is employed in this case ?

a) Topical b) Pulmonery

c) Transdermal d) Oral. ☐

x) The ions which are not involved in ligand binding is

a) Carbon b) Heme

c) Glucose d) ADP. ☐

xi) In chemical modification cystamine derivation followed by

a) N_2 addition b) OH^- addition

c) NH_2 protection d) C substitution. ☐

xii) Structural Proteomics deals with

a) Cellular localization b) PTMs

c) Edman Degeadation d) 3D structure. ☐

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is Ubiquitin ? Write down its function in cellular process. 2 + 3

3. What are polyketides ? What is its function ? How are they synthesized ? 1 + 2 + 2

4. Differentiate between prokaryotic and eukaryotic translation (five difference). 5

5. Write short notes on Reverse Genetics. 5

6. What is proteomics ? How many faces of proteomics are there ? State their significance. 1 + 4

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following questions. 3 × 15 = 45

7. What do you mean by protein folding ? What are the different forces help protein folding ? Write down the details mechanism of protein folding. What is the faith of misfold protein ? 2 + 2 + 9 + 2

8. What is Proteasome ? What is its function inside the cell ? Write down about its structure, mechanism of action and regulation of its funcion. 1 + 2 + 12

9. Write short notes of the following : 3 × 5

   i) Hsp 70

   ii) Prion

   iii) Nonribosomal peptides.

10. What are the two main steps in subcellular fractionation ? State how the proteins are extracted from tissues. 6 + 9

11. What are chaotropes ? Explain how the small ionic molecules act as interfering substances in 2D gel. Explain 2D gel electrophoresis in reference to (i) SDS PAGE, (ii) Staining, (iii) Analysis of 2D gels. 3 + 3 + 3 + 3 + 3

END