Name :	
Roll No. :	A Bran of Exercising and Explored
Invigilator's Signature :	

CS/M.TECH(BT)IntPhD Mol.Bio./Micro.Bio./ SEM-1/MBT/PHMC/PHMB-101/2011-12 2011

MICROBIAL BIOCHEMISTRY

Time Allotted : 3 Hours

Full Marks : 70

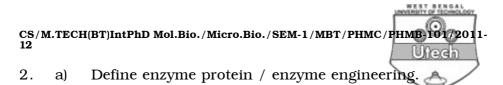
The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Answer Question No. 1 which is compulsory and any *six* from the rest.

- 1. a) Define a psychrophile.
 - b) "Enzymes are superior to chemical catalyst." Comment.
 - c) What is casein ?
 - d) Differentiate between tropophase and idiophase.
 - e) Calcium alginate is a glucopolymer. State True or False.
 - f) "Pasteurization is not sterilization." Comment.
 - g) Name the enzyme involved in oxidation of luciferin to oxiluciferin.
 - h) Write the difference between glycosidase and transpeptidase.
 - i) What is forward and reverse genetics ?
 - j) Secondary metabolites are not essential to the producing organism. State True or False. 10×1

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- b) Write the steps of enzyme engineering in detail.
- c) What are the different methods of enzyme / protein modification ? Which one you prefer and why ? 1 + 5 + 4
- 3. a) Describe the method of oligonucleotide directed mutagenesis by diagram only.
 - Describe a strategy for increasing stability of a protein that has
 - i) no cystein residue
 - ii) an odd number of cystein residue. 5 + 5
- 4. a) Describe the method with example how you eliminate the cofactor requirement of an enzyme by enzyme engineering ?
 - b) Describe the method with example how you can improve the protease resistance of an enzyme. 5 + 5
- 5. a) Write the strategy to isolate a β -lactamase-free penicillin acylase producing microbes.
 - b) Describe the protocols for purification of an enzyme.
 - c) What are isozymes ? 3 + 5 + 2
- 6. a) " β -amylase cannot be assayed directly." Comment.
 - b) Name the enzyme involved in conversion of glucose to fructose.

c) Why invert sugar is more sweet than table sugar ?

6 + 1 + 3

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- 7. a) What is the difference between impeller and baffle in a fermenter ?
 - b) "The upstream processing in batch and continuous fermentation is same." Comment.
 - c) Ultrafiltration is involved in upstream processing of fermentation. State True or False.
 - d) Write the equation of heat exchange during fermentation. 3 + 4 + 1 + 2
- 8. a) Describe the difference between biotransformation and biodegradation by microbe.
 - b) Write steps involved in degradation of a haloaromatic insecticide by microble.
 - c) Write the method in detail, used for screening mutagens. 2 + 5 + 3

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