Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(BT-OLD)/SEM-4/BT-402/2012

2012

INDUSTRIAL MICROBIOLOGY AND ENZYME TECHNOLOGY

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.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) Which of the following cannot cause mutation ?

a) *X*-ray b) Infrared ray

c) UV ray d) Gamma ray.

ii) Most widely used organism used in ethanol production

a) zymonomas mobilis

b) saccharomyces cerevisae

c) both (a) and (b)

d) none of these.

iii) Beta amylase can hydrolyse amylase to produce

a) Glucose and maltose

b) Glucose

c) Lactose and glucose

d) Maltose.

iv) Xanthan can be obtained by microbial fermentation as

a) a primary metabolite

b) extracellular enzyme

c) secondary metabolite

d) intracellular enzyme.

v) Mutation could be created by *X*-rays this was found by

a) Muller b) Morgan

c) Meyer d) Flemming.

vi) PCR uses thermophilic enzyme

a) Tag polymerase

b) Alkaline phosphatase

c) Klenow polymerase

d) None of these.

vii) Enzyme is used in detergent

a) α amylase b) Alkaline phosphatase

c) Glucose isomerase d) None of these.

viii) Glucose is converted to frutose by

a) Glucose isomerase

b) α amylase

c) Alkaline phosphatase

d) None of these.

ix) Enzyme is used in biopolishing of cotton textiles

a) amylase b) Alkaline protease

c) Cellulase d) Lipase.

x) Entrapment of *E*-coli is done by

a) K-carrageenan b) Alginate

c) Ca alginate d) Mg Pectinate.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What are base analogue ? Can they be used for strain development ? State at least two examples.
3. Describe briefly recovery of citric acid.
4. What is the application of polysaccharides in industry ?
5. What is submerged fermentation ? What are advantages and application of submerged fermentation ?
6. What is feed back inhibition ? How it use in industry ?
7. How an enzyme is engineered by site directed mutagenesis ?
8. What is immobilization of enzyme ? What is the purpose of the technique ? Discuss briefly.

GROUP – C
(Long Answer Type Questions)

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

9. Defferentiate the following :
   a) Spontaneous and induced mutation.
   b) Genome and chromosomal mutation.
   c) Mutagenesis through physical mutagens.

10. Write short notes on the following : 3 × 5
   a) Protoplast fusion
   b) What is plasmid ? What are the properties of plasmid ?
   c) Replica plating for selection of mutants

11. a) Describe briefly the media design for the production of penicillin by Penicillum chrysogenum.
   b) Describe briefly the penicillin product process. 5 + 10

12. What is wine ? How wine is produced ? How many types of wine are available in the market. 1 + 10 + 4

13. What is solid state fermentation ? What are the advantages and disadvantages of solid state fermentation ?

   What is the application of solid state fermentation ?

   How the inhibitory effect is removed for the production of citric acid. $2 + 2\frac{1}{2} + 2\frac{1}{2} + 3 + 5$

14. Deduce Nevier Stoke's equation ?

15. Discuss with a few examples how the technology to improve the stability of enzyme ? What are the cross linking reagent and matrix used for the immobilization process ? 8 + 7

16. What do you mean by DNA repair ? Describe DNA repair process. 2 + 13