Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.SC.(H)/MICRO.BIO/SEM-4/MBT-404/2010

2010

MICROBIAL BIOTECHNOLOGY

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 any *ten* of the following : $10 \times 1 = 10$

   i) Commercial sources of enzyme proteases are obtained from

      a) Penicillium b) Aspergillus

      c) Candida d) Streptomyces.

   ii) Hyperthermophiles have an optimum growth temperature of

      a) above 75°C and maximum of 100°C

      b) 50°C or more, a maximum of up to 70°C

      c) 20°C and maximum 45°C

      d) 0°C and maximum 25°C.

iii) Free living nitrogen fixing micro-organism is

a) *Rhizobium* b) *Bradirhizobium*

c) *Frankia* d) none of these.

iv) Beta - lactum antibiotics act by

a) disrupting synthesis of the cell envelope in growing cells

b) disrupting synthesis of the cell envelope in stationary cells

c) inhibiting the synthesis of peptidoglycan at an early stage

d) interference with protein synthesis.

v) Antibiotic used against anaerobic bacteria is

a) polymyxins b) nalidixic acid

c) metronidazole d) rifamycins.

vi) Sulphonamide antibiotic is used against

a) Gram-positive bacteria

b) Gram-negative bacteria

c) Gram-positive and negative

d) Fungi.

vii) Log phase of growth is also called

a) exponential growth

b) idophase

c) stationary phase

d) decline phase.

viii) Heart of the fermentation is called

a) starter culture b) bioreactors

c) products d) the reactions.

ix) Vitamin *B12* is produced by

a) Fungi, *A. gossypii* b) Pseudomonas

c) Acetobacter sp. d) Aspergillus.

x) Antibiotics like tetracyclines, chloramphenicol, streptomycin inhibits

a) cell wall synthesis b) protein synthesis

c) RNA synthesis d) DNA synthesis.

xi) L forms of bacteria are likely if the following antibiotic is present in cultures. It is

a) Penicillin b) Chlormycetin

c) Erythromycin d) Streptomycin.

xii) .Clostridium species converts sugars and lactic acid to

a) Acetic acid b) Citric acid

c) Butyric acid d) Formic acid.

GROUP – B

(Short Answer Type Questions)

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

2. What are xenobiotics ? What are biomagnifications and bioremediation ?
3. Draw a Bioreactor & mention its different parts.
4. Write the importance of Biodiesel in India.
5. What are the important uses of Biogas ?
6. What is the importance of Citric acid ? Mention its microbial production.

GROUP – C

(Long Answer Type Questions)

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

7. Write short notes on any *three* of the following : 3 × 5

   i) Synergism and antagonism between antibiotics

   ii) Bacterial resistance to antibiotics

   iii) Disc diffusion test

   iv) Diauxic growth

   v) Downstream processing.

8. What are the inputs of Waste Water Treatment ? Discuss the scope of Waste Water Treatment. What are the advantages of Waste Water Treatment ? 5 + 5 + 5

9. Discuss the role of Vermiculture technology is Solid Waste Management. Describe the various methods of Biocomposting. Prove that 'Biocompost is better fertilizer than chemical fertilizer'. 5 + 5 + 5

10. What is single cell protein (SCP) ? What are the advantages of using microbes for SCP production ? What are the economic implications of SCP ? 5 + 5 + 5

11. Explain the process of Bioleaching. What are the advantages & disadvantages associated with bioleaching ? 5 + 5 + 5