Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(FT)/SEM-6/FT-602/2011

2011
ADVANCED FOOD MICROBIOLOGY AND 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 the following questions : $10 \times 1 = 10$

i) *Erwinia caratovora* naturally present in vegetables due to capability of producing

a) Amylase b) Cellulase

c) Pectinase d) Hemicellulase.

ii) Specific growth rate is

a) Intrinsic factor b) Extrinsic factor

c) Implicit factor d) Processing factor.

iii) IMF contains

a) $0 \cdot 6 - 0 \cdot 7$ % moisture

b) $0 \cdot 7 - 0 \cdot 8$ % moisture

c) $0 \cdot 8 - 0 \cdot 95$ % moisture

d) $0 \cdot 75 - 0 \cdot 85$ % moisture.

iv) Rappaport-Vassiliadis (RV) medium is used for isolation of

a) *Salmonella* b) *Shigella*

c) *Streptococcus* d) *Staphylococcus*.

v) Mycotoxin patulin is produced by

a) *Aspergillus niger* b) *Penicilium expansum*

c) *Fusaria poae* d) none of these.

vi) Disadvantage of single cell proteins is

a) contain higher amount of nuclic acids

b) cause gout

c) sometimes contain toxins

d) all of these

vii) Kimchi is

a) rice based product b) wheat based product

c) milk based product d) soy based product.

viii) Host organism for cloning is

a) *E.coli* b) *Lactobacillus*

c) *Saccharomyces* d) none of these.

ix) Example of chemical mutagen is

a) Nitrite b) NTG

c) sulphonate d) all of these

x) Strictly anaerobic microorganisms contain

a) oxidase b) superoxide dismutase

c) all of these d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. Discuss about the defects of vinegar.
3. What are food poising, food infection & intoxication ? $2+1\frac{1}{2}+1\frac{1}{2}$
4. How can you determine most probable number of microorganisms ?
5. What are flat sour spoilage, thermophillic acid spoilage and sulphide spoilage ? $2+1\frac{1}{2}+1\frac{1}{2}$
6. What is the effect of O-R potential in spoilage of food ?
7. Give one example each of bacteria, algae and yeast for SCP production. Which of them is the most advantageous and why? $2+1\frac{1}{2}+1\frac{1}{2}$
8. How can natto be prepared ? Write the differences between miso and soya sauce. $3 + 2$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

9. Mention the natural microbial agents present in milk and egg. What is the role of peroxidase and catalase in microorganisms ? What are the reasons for which microorganisms are psychrophilic and thermophilic in nature? What is the role of CO_2 in food preservation ? What is the role of *Shewanella putrefaciences* in fish spoilage ? What is the role of *Erwinia* in vegetable spoilage ?

$3 + 2 + 2 + 3 + 2 + 3$

10. Explain the nature of botulin. What is the criterion for selection of medium for coliform bacteria ? What is mycotoxin ? What are the suitable conditions for mycotoxin production ? Give example of some mycotoxin produced by *Aspergillus, Penicilium* and *Fusarium* species. Explain about DEFT method for microbial enumeration.

3 + 3 + 1 + 2 + 3 + 3

11. Briefly differentiate between DNA and RNA. What is cloning ? Briefly explain the cloning process. What is central dogma ? Briefly describe DNA transcription process. 3 + 2 + 3 + 2 + 5

12. What are the advantages of lactic fermention ? Briefly describe the production of tempeh. What biochemical changes take place during tempeh production ? How acetic acid percentage is calculated in cucumber fermentation ? What is the role of microorganisms in sauerkraut fermentation ? 3 + 5 + 3 + 2 + 2

13. What are the advantages and disadvantages of single cell protein (SCP) ? Give example of microorganisms used for SCP production (Bacteria, yeast & mold, two of each). Discribe the SCP production process from petroleum waste. Mention the different processes of mushroom preservation.

3 + 3 + 5 + 4

14. What is mutation ? Give example of physical and chemical mutagens. Write the basic mechanisms of two mutagens. What is the role of hop in beer fermentation ? Write the names of microorganisms which are isolated using by MacConkey, Rappaport-Vassilliadis, Baired-Parker and PEMBA medium. What is the composition of PEMBA?

2 + 3 + 3 + 3 + 4