



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 × 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) 0.6 – 0.7 % moisture
 - b) 0.7 – 0.8 % moisture
 - c) 0.8 – 0.95 % moisture
 - d) 0.75 – 0.85 % 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) *Penicillium expansum*
c) *Fusaria poae* d) none of these.
- vi) Disadvantage of single cell proteins is
- a) contain higher amount of nucleic 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.

$$3 \times 5 = 15$$

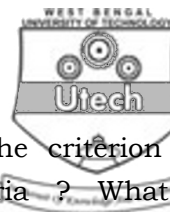
2. Discuss about the defects of vinegar.
3. What are food poisoning, food infection & intoxication ?
$$2 + 1\frac{1}{2} + 1\frac{1}{2}$$
4. How can you determine most probable number of microorganisms ?
5. What are flat sour spoilage, thermophilic acid spoilage and sulphide spoilage ?
$$2 + 1\frac{1}{2} + 1\frac{1}{2}$$
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 CO₂ in food preservation ? What is the role of *Shewanella putrefaciens* 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 fermentation ? 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). Describe 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-Vassiliadis, Baird-Parker and PEMBA medium. What is the composition of PEMBA?
- 2 + 3 + 3 + 3 + 4