Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(FT-N)/SEM-3/FT-302/2011-12

2011

FOOD MICROBIOLOGY

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) Which among the following is a spore former ?
      a) *Micrococcus caseolyticus*
      b) *Pseudomonas fluorescence*
      c) *Mycobacterium tuberculosis*
      d) None of these.

   ii) Which is a rod-shaped organism among the following ?
      a) *Bacillus subtilis* b) *Clostridium botulinum*
      c) None of these d) All of these.

   iii) Immediately after rain, the load of aerial microbial flora
      a) increases
      b) decreases
      c) remains constant
      d) there is an increase in the number of the non-spore formers.

iv) An antimicrobial agent
   a) kills the organisms
   b) does not allow the organisms to grow
   c) increases the growth of a particular type
   d) all of these.

v) A pure culture may be obtained by
   a) streak plate technique
   b) pour plate technique
   c) enrichment culture technique
   d) all of these.

vi) Which one is an anaerobe ?
   a) *Clostridium botulinum*
   b) *Bacillus stearothermophilus*
   c) *Staphylococcus aureus*
   d) None of these.

vii) Pasteurisation kills
   a) non-spore formers b) spore formers
   c) pathogens d) all of these.

viii) *D*-value increases
   a) if the temperature increases
   b) if the temperature decreases
   c) with no effect of temperature
   d) if the microbial load increases.

ix) Which of the following microorganisms can produce micotoxin ?
   a) *Aspergillus flavus* b) *C. Botulinum*
   c) Coliform bacteria d) None of these.

x) During manufacture of which of the following products microorganism is added intentionally from outside ?
   a) Jam b) Jelly
   c) Bread d) Ice-cream.

xi) After staining, Gram-negative organism is stained as
   a) white b) black
   c) blue violet d) red.

xii) Cell wall of Gram-negative organism are rich in

a) peptidoglycan b) protein

c) lipid d) none of these.

xiii) Protoplast is lacking

a) cell wall b) cytoplasmic membrane

c) protoplasm d) DNA.

xiv) Agar is

a) acidic b) basic

c) neutral d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. Explain the Gram staining procedure. Give an example of Gram positive organism and Gram negative organism each. 3 + 2

3. What is endospore ? Describe the structural characteristics of endospore. Give two examples of Spore forming bacteria. 1 + 3 + 1

4. Define ultramicroscopic organisms. What are the characteristics of microscopic organisms ? 2 + 3

5. Briefly discuss the bacterial growth with a neat diagram.

6. Write short notes on Sterilization procedure using an autoclave.

GROUP – C

(Long Answer Type Questions)

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

7. Draw a neat sketch of a Bright Field Microscope and show the different parts of this microscope. Explain briefly the functions of each part. 7 + 8

8. Why is it important to know the microbial load of air and water ? What are the probable reasons if it is observed that there is an increase in the microbial count of air ? How will you determine the suitability of water for use in a food industry ? 4 + 4 + 7

9. Define *TDT*, *D*, *F* and *Z* values. What are their importance in thermal processing of food ? What is the effect of temperature on these factors ? 6 + 6 + 3

10. How meat, poultry, and egg are contaminated with microorganism ? What is the method used to determine the quality of a milk sample received from pasteurization plant ? Give three examples of different types of food poisoning. What is the red milk ? 8 + 2 + 3 + 2

11. What are the two different methods of isolation of pure culture ? Explain the isolation of pure culture by streak plate method. What is the importance of pure culture technique in laboratory work ? 3 + 8 + 4

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