

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. (D.T.)**

Semester	: VI (V Dean)	Academic Year	: 2021-2022
Course No.	: DM-606	Course Title	: Food and Industrial Microbiology
Credits	: 2 + 1 = 3	Total Marks	: 50
Day & Date	: Wednesday, 04/05/2022	Time	: 02.30 hrs.

- Note :
- 1) All questions from **Section 'A'** are compulsory.
  - 2) Solve **Any Three** questions from **Section 'B'**.
  - 3) Draw neat and well labeled diagram wherever necessary.

**SECTION - 'A'**

Q. 1 A) Choose the most appropriate answer from the options given below: (05)

i) Among the following which is not a intrinsic factor affecting microbial growth in food .....

- |                           |                                    |
|---------------------------|------------------------------------|
| a) $P^H$                  | b) Moisture content                |
| c) Temperature of storage | d) Oxidation – Reduction Potential |

ii) The time required to kill or destroy 90% of the microorganisms at a given set of conditions is called as .....

- |                           |                     |
|---------------------------|---------------------|
| a) D value                | b) Z value          |
| c) Decimal Reduction Time | d) Both 'a' and 'c' |

iii) The microorganism used for the industrial production of lactic acid is .....

- |                                    |                                    |
|------------------------------------|------------------------------------|
| a) <i>Saccharomyces cerevisiae</i> | b) <i>Clostridium botulinum</i>    |
| c) <i>Staphylococcus aureus</i>    | d) <i>Lactobacillus bulgaricus</i> |

iv) Industrially important microorganisms are preserved at liquid nitrogen, the temperature of liquid nitrogen is .....

- |                           |                           |
|---------------------------|---------------------------|
| a) $0^{\circ}\text{C}$    | b) $-120^{\circ}\text{C}$ |
| c) $-196^{\circ}\text{C}$ | d) $-100^{\circ}\text{C}$ |

v) Keeping out microorganisms away from the food is called as .....

- |                   |                  |
|-------------------|------------------|
| a) Asepsis        | b) Filtration    |
| c) Pasteurization | d) None of these |

B) Define the following terms. (05)

- i) Spoilage
- ii) F -Value
- iii) Fermentation
- iv) Water activity
- v) Biopreservation

Q. 2 A) Give two examples of the following. (05)

- i) Types of food spoilage in canned foods.
- ii) Physical methods used for food preservation.
- iii) Microorganisms used for production of protease.
- iv) Microbes responsible for blue mold and green mold in citrus fruits.
- v) Fermented whey beverages.

- B) State whether true or false, If false, rewrite the statement after making necessary corrections. (05)
- i) Corn steep liquor, yeast extracts and peptones are important sources of carbon.
  - ii) Genetic engineering techniques are not used for the improvement of industrially important microorganisms.
  - iii) Downstream processing involves the suitable techniques and methods recovery purification and characterization of the desired fermentation product.
  - iv) Benzoic acid and parabens are used as chemical preservatives for preservation of foods.
  - v) Lipase enzyme is mainly used for the breakdown of proteins.

**SECTION - 'B'**

- Q. 3 A) Discuss in detail on microbial spoilage of fruits. (05)  
B) Discuss in brief preservation by radiations treatment. (05)
- Q. 4 A) Describe in detail production of industrial alcohol. (05)  
B) Discuss in brief sources of contamination of food and control of spoilage. (05)
- Q. 5 A) Differentiate between food microbiology and industrial microbiology. (03)  
B) Discuss in short about vitamin B-12 production. (03)  
C) Explain the microorganisms and process involved in the production of single cell protein and their uses. (04)
- Q. 6 A) Differentiate between chemostat and turbidostat. (03)  
B) Enlist the various preservation techniques and discuss about chemical preservation. (03)  
C) Discuss in detail microbiological spoilages of cereal and cereal based products. (04)
- Q. 7 Describe in detail design, control and function of a fermentor with a well labeled diagram. (10)

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