

**B.Sc. BIOTECHNOLOGY**  
**Fourth Semester**  
**FOOD AND INDUSTRIAL BIOTECHNOLOGY**  
**(BBT - 19)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**PART-B (Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**1. Answer the following questions (any five):**

**2×5=10**

- a) Draw different types of agitators.
- b) Write the intoxication process of Botulism.
- c) Write 2 microbes involved in the process of Salmonellosis.
- d) What are the raw materials for the production of ethanol?
- e) Immobilized enzyme.
- f) Draw an ideal fermenter.
- g) How do we control foaming?

**2. Answer the following questions (any five):**

**3×5=15**

- a) Write about spoilage of fruit and fruit products.
- b) Explain the different types of sparger.
- c) Write a note on prebiotics.
- d) Write the use of protease in food industry.
- e) Draw the diagram of protoplast fusion.
- f) Write the three parabens of benzoic acid.

g) Describe baffles.

**3. Answer the following questions (any five):**

**5×5=25**

- a) Process of production of yogurt.
- b) Biological method of food preservation.
- c) Explain Stirred tank fermenter with diagram.
- d) Write the process of citric acid production.
- e) Write any two physical method of food preservation.
- f) What are the problems of food storage?
- g) Define SCP. Describe the renewable source for production of SCP.

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Duration: 20 minutes

Marks – 20

**PART-A (Objective)**

Time: 20 mins

Total Marks: 20

**I. Choose the correct answer:**

**1×10=10**

1. Temperature necessary to kill a given number of microorganism in a fixed time is called \_\_\_\_\_ (thermal death point/thermal death time).
2. The time necessary to kill a given number of microorganism at a specified temperature is called \_\_\_\_\_ (thermal death point/ thermal death time).
3. (Nisin/ Protease) \_\_\_\_\_ is the first Bacteriocin.
4. Miso is an fermented \_\_\_\_\_ (milk/ soyabean).
5. Kefir is an fermented \_\_\_\_\_ ( milk/soyabean).
6. GRAS means \_\_\_\_\_ (generally related as safe/generally recognised as safe).
7. CO<sub>2</sub> is an \_\_\_\_\_ (renewable carbon source/ non renewable carbon source).
8. Methanol is an \_\_\_\_\_ (renewable carbon source/ non renewable carbon source).

9. SCP is rich in \_\_\_\_\_ (high quality fat/ high quality protein).

10. *Lactobacillus* is \_\_\_\_\_ (gram negative/ gram positive) bacteria.

**II. Match the following:**

**1×10=10**

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 1. <i>Clostridium botulinum</i>      | a. typhoid                           |
| 2. <i>Salmonella typhi</i>           | b. 60 <sup>0</sup> for 30 min        |
| 3. SCP                               | c. 72 <sup>0</sup> for 15 sec        |
| 4. LTLT                              | d. C <sub>1</sub> –C <sub>4</sub>    |
| 5. HTST                              | e. C <sub>5</sub> –C <sub>8</sub>    |
| 6. <i>Clostridium acetobutylicum</i> | f. Whey yeast                        |
| 7. <i>Leuconostoc mesenteroids</i>   | g. intoxication                      |
| 8. Gaseous hydrocarbon               | h. Production of sauerkraut          |
| 9. Liquid hydrocarbon                | i. production of acetone and butanol |
| 10. <i>Kluveromonas lactase</i>      | j. high protein content              |

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