

M.Sc. BOTANY  
THIRD SEMESTER  
MICROBIOLOGY  
MSB-304 E

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Time: 15 mins.

( Objective )

2023-12

**SET  
A**

Full Marks: 35

Marks: 10

1×10=10

Choose the correct answer from the following:

1. A fed-batch process is a:  
a. Closed system  
b. Continuous system  
c. Intermittently fed system  
d. Biphasic system
2. A double spiral heat-exchanger is a:  
a. Direct heat exchanger  
b. Indirect heat exchanger  
c. A temperature control device  
d. Thermostat
3. An air-lift fermenter uses:  
a. An impeller for mixing  
b. Air bubbles for mixing the contents  
c. Differential density for mixing purpose  
d. A sparger for mixing the content
4. Batch sterilization cycle time consists of:  
a. Two phases  
b. Three phases  
c. Four phases  
d. Five phases
5. Protected fermentations uses:  
a. Sterilized media  
b. Pasteurised media  
c. Pasteurised media with low pH  
d. Unsterilised media
6. Which of the following is used as Bioplastic?  
a. Polystyrene  
b. Polypropylene  
c. Polyhydroxybuterate  
d. Dextran
7. Yeast cells are good source of:  
a. Vitamin A and B  
b. Vitamin A and D  
c. Vitamin B and D  
d. All of these
8. Unicelled microbes grown as source of proteins are called:  
a. Microbial protein  
b. Single cell protein  
c. Unicelled protein  
d. None of these
9. Zymase is obtained from:  
a. *Saccharomyces ludwigi*  
b. *Saccharomyces cerevisiae*  
c. *Saccharomyces octospora*  
d. *Saccharomyces boulardii*.

10. The importance of Yeast Extract in the industrial fermenter is:
- a. Acts as vitamin and micronutrient source
  - b. Acts as nitrogen source
  - c. Acts as carbon source
  - d. Acts as carbon and vitamin source

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**(Descriptive)**

Time : 1 hr. 15 mins.

Marks : 25

[ Answer question no.1 & any two (2) from the rest ]

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|---|--------|
| 1. Different stages of growth in Bacterial Batch culture.   | 5      |
| 2. How will you design and construct a fermenter and write in brief the characteristics of a fermenter with suitable diagram. | 5+5=10 |
| 3. Write in brief the different modes of preservation of microorganisms.  | 10     |
| 4. What is PHB? Write in brief the production method of PHB and its uses.   | 2+8=10 |
| 5. What is brewing? Write the methods of production of beer.  | 2+8=10 |

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