

**M.Sc. BOTANY
FOURTH SEMESTER
MICROBIOLOGY
MSB-403 E**

[USE OMR SHEET FOR OBJECTIVE PART]

**SET
A**

Duration: 3 hrs.

Full Marks: 70

(Objective)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

- Batch sterilization cycle time consists of:
 - Two phases
 - Three phases
 - Four phases
 - Five phases
- An air-lift fermenter uses:
 - An impeller for mixing
 - Air bubbles for mixing the contents
 - Differential density for mixing purpose
 - A sparger for mixing the content
- A fed-batch process is a:
 - Closed system
 - Continuous system
 - Intermittently fed system
 - Biphasic system
- Protected fermentation uses:
 - Sterilized media
 - Pasteurized media
 - Pasteurized media with low pH
 - Unsterilized media
- Molasses and cornsteep liquor are usually used as:
 - Carbon source for large scale industrial fermentation process
 - Carbon source for small scale industrial fermentation process
 - Mineral source for large scale industrial fermentation process
 - Mineral source for small scale industrial process
- Soy-meal, Peptone and Tryptone are used as the source of:
 - Carbon
 - Carbon and nitrogen source
 - Nitrogen source
 - Mineral source
- Yeast cells are good source of:
 - Vitamin A and B
 - Vitamin A and D
 - Vitamin B and D
 - All of these
- Which of the following is used as Bioplastic?
 - Polystyrene
 - Polypropylene
 - Polyhydroxybuterate
 - Dextran
- Zymase is obtained from:
 - Saccharomyces ludwigi*
 - Saccharomyces cerevisiae*
 - Saccharomyces octospora*
 - Saccharomyces boulardii*

10. Unicelled microbes grown as source of protein called:
 - a. Microbial protein
 - b. Single cell protein
 - c. Unicelled protein
 - d. None of these
11. The use of living microorganism to degrade environmental pollutants is called:
 - a. Microremediation
 - b. Nanoremediation
 - c. Bioremediation
 - d. None of the above
12. Which of the following bacterium is called as the superbag that could clean up oil spills?
 - a. *Bacillus subtilis*
 - b. *Pseudomonas putida*
 - c. *Pseudomonas denitrificans*
 - d. *Bacillus sterothermophilus*
13. During which stage waste water treatment are methanogenic microbes most important?
 - a. Primary treatment
 - b. Sludge digestion
 - c. Biological oxidation
 - d. Disinfection
14. Bioaugmentation is a process that involves:
 - a. Using plants for bioremediation
 - b. Bioventing
 - c. Sludge removal
 - d. Adding microbes to a clean up site
15. Which bioremediation approach involves using plants to degrade pollutants?
 - a. Biopile
 - b. Phytoremediation
 - c. Composting
 - d. Land farming
16. The undesirable change in food that makes it unsafe for human consumption is referred as:
 - a. Food decay
 - b. Food spoilage
 - c. Food loss
 - d. All of the above
17. Pasteurization is a:
 - a. Low temperature treatment
 - b. Steaming treatment
 - c. High temperature treatment
 - d. Low and high temperature treatment
18. The yoghurt is made from:
 - a. *Lactobacillus bulgaricus*
 - b. *Streptococcus thermophilus*
 - c. *Streptococcus cremoris*
 - d. Mixed culture of a and b
19. The most commonly employed cross linked polymer is the:
 - a. Polyacrylamide gell
 - b. Collagen
 - c. Celluloses
 - d. Cation exchange resin
20. Which of the following is the commonly employed adsorbent?
 - a. Calcium carbonate
 - b. Alumina
 - c. Celluloses
 - d. All of these

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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|---|----------|
| 1. What is a fermenter? Write in brief the construction methods of a fermenter with suitable diagram. | 1+7+2=10 |
| 2. Write short notes on:
a) Batch fermentation
b) Feed batch fermentation | 5+5=10 |
| 3. What is brewing? Write in brief the production of alcoholic beverage- Wine. | 1+9=10 |
| 4. What is a biopolymer? Write in brief the microbial production of PHB and mention the applications. | 1+7+2=10 |
| 5. What is Bioremediation? Discuss the need, scope and environmental applications of Bioremediation. | 2+8=10 |
| 6. What are AM fungi? Write in brief the benefits of AM fungi provided to plant hosts. | 2+8=10 |
| 7. What is enzyme immobilization? Write in brief the different methods of the production of immobilized enzymes and mention their uses. | 1+7+2=10 |
| 8. Write in brief the production of Butter milk and Cheese. | 5+5=10 |

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