

**B.Sc. MICROBIOLOGY
FOURTH SEMESTER
ENVIRONMENTAL MICROBIOLOGY
BMB-401**

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

1. BOD is a measure of:
 - a. Industrial wastes passed into water bodies
 - b. Amount of carbon monoxide combined with haemoglobin
 - c. Extent of pollution with organic matter
 - d. Amount of oxygen required by plants during night
2. How does solubility of oxygen in water change with respect to temperature?
 - a. It decreases with increase in temperature
 - b. It increases with increase in temperature
 - c. It decreases with decrease in temperature
 - d. It does not depend on temperature
3. Warm and polluted water has:
 - a. Higher D.O. value
 - b. Lower D.O. value
 - c. No D. O. value
 - d. None of the above
4. Which one of the following is not a type of anaerobic biological treatment of waste water?
 - a. Activated sludge process
 - b. Trickling filter
 - c. Rotating biological contractor
 - d. Septic tank
5. What is the definition for gut microbiome?
 - a. Studies in the gut microbiota is in their infancy, there is no universal definition
 - b. The human digestive tract is referred to as the gut microbiome
 - c. The microbes present in the five senses
 - d. The human digestive and gastrointestinal tract associated microbes
6. Conversion of ammonia to nitrite and then to nitrates is called:
 - a. Ammonification
 - b. Denitrification
 - c. Assimilation
 - d. Nitrification
7. MPN stands for:
 - a. Most Probable Number
 - b. Most Productive Number
 - c. Multiple Probable Number
 - d. Method for Productive test
8. The term biomagnification is referred to as:
 - a. Increase in body weight
 - b. Uncontrolled growth of pathogens
 - c. Increase of bacterial colonies in a culture medium
 - d. Accumulation of non-biodegradable pollutant in food chain

9. Super bugs are:
 - a. Gram positive
 - b. Gram negative
 - c. Both a and b
 - d. None of the above
10. EMB agar is a:
 - a. Selective media
 - b. Differential media
 - c. Complex media
 - d. All of the above
11. Deep sea is a habitat for:
 - a. Psychrophiles
 - b. Barophiles
 - c. Xerophiles
 - d. Both a and b
12. Obligate halophiles require NaCl concentration of about:
 - a. 9%
 - b. 3%
 - c. 0%
 - d. 100%
13. *Methanobacterium wolfei* is an example of:
 - a. Thermophiles
 - b. Hyperthermophiles
 - c. Alkaliphiles
 - d. Barophiles
14. Optimum temperature of growth for hyperthermophiles is:
 - a. 45°C
 - b. 80°C
 - c. 100°C
 - d. 130°C
15. Obligate alkaliphiles grow at a PH:
 - a. >9
 - b. 9<
 - c. >8
 - d. None of the above
16. The name of the protein which protects nitrogenase enzyme is:
 - a. Myoglobin
 - b. Hemoglobin
 - c. Leghemoglobin
 - d. None of the above
17. Commensalism isprocess.
 - a. Unidirectional
 - b. Bidirectional
 - c. Cyclic
 - d. All of the above
18. *Aquaspirillum magnetotacticum* transform extracellular iron to the mixed valence iron oxide mineral.....
 - a. Fe₂O₃
 - b. FeO
 - c. Fe₃O₆
 - d. Fe₃O₄
19. The soluble inorganic forms of phosphorus is:
 - a. Orthophosphate
 - b. Phosphate
 - c. Calcium phosphate
 - d. All of the above
20. Chromatium is an example of:
 - a. Photosynthetic non-sulphur bacteria
 - b. Photosynthetic sulphur bacteria
 - c. Non-sulfur purple bacteria
 - d. Iron reducing bacteria

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

- | | |
|--|--------|
| 1. Explain the process of creation of superbug with a diagram. | 10 |
| 2. Explain multiple tube fermentation test with a diagram. What is membrane filter technique? | 7+3=10 |
| 3. Explain the process of primary treatment of waste water. Explain pond process. | 7+3=10 |
| 4. Write short notes on:
a) Microbiomics
b) Ruminants | 5+5=10 |
| 5. Describe sulphur cycle with a neat schematic diagram. | 10 |
| 6. Define microbial interactions. Discuss mutualism and predation with suitable examples. | 2+8=10 |
| 7. Define extremophiles. Discuss extremophiles in extreme temperature conditions. Give examples. | 2+8=10 |
| 8. Explain the process of root nodule formation by Rhizobium with neat labelled diagram. | 10 |

= = *** = =