

**B.Sc. MICROBIOLOGY
SECOND SEMESTER
MICROBES IN ENVIRONMENT
BMB – 203**

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

(PART-A: Objective)

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1X20=20

1. The bacteria involved in denitrification process of nitrogen cycle include
 - a. Pseudomonas
 - b. Thiobacillus denitrification
 - c. Micrococcus denitrification
 - d. All of the above
2. The main reservoir of nitrogen in the biosphere is the:
 - a. Ocean
 - b. Rocks
 - c. Atmosphere
 - d. Organism
3. What is the role of nitrogen fixing bacteria in the nitrogen cycle?
 - a. They create acid rain
 - b. They cause algal blooms
 - c. They make nitrogen into more usable forms
 - d. They move water through the environment
4. Which one is a sedimentary cycle?
 - a. Oxygen Cycle
 - b. Hydrogen Cycle
 - c. Nitrogen Cycle
 - d. Phosphorus Cycle
5. The kind of dangerous that is formed when things rot in landfills is called
 - a. Oxygen
 - b. Carbon Dioxide
 - c. Nitrogen
 - d. Methane
6. ----- can be produced from landfill waste
 - a. Natural gas
 - b. Liquefied petroleum gas
 - c. Biogas
 - d. Any of the above
7. What is the temperature at which MPN test is performed?
 - a. 35°C
 - b. 37°C
 - c. 40°C
 - d. 45°C
8. An addition of small dose of chlorine gas to the filtered water is known as
 - a. Coagulation
 - b. Sedimentation
 - c. Filtration
 - d. Chlorination
9. The number of bacterial colonies by agar plate count test should not exceed ----- per ml for potable water
 - a. 1
 - b. 10
 - c. 100
 - d. 1000

10. The simplest and the most common method used in the cities is to collect and dump the waste in a -----
- Landfill
 - River
 - Ocean
 - Any of the above
11. Where can we find both running water as well as stagnant water?
- Marine ecosystems
 - Wetlands
 - Coral reefs
 - Freshwater ecosystems
12. A halophile.....
- Is heat loving
 - Grow at pH=0
 - Thrives in high salt
 - Is cold loving
13. A Cryptoendolith.....
- Survive underneath rocks in cold deserts
 - Survive deep inside the ocean
 - Survive at high hydrostatic pressures
 - Survive in microscopic space within rocks
14. Which of the following comes under the category of positive association?
- Neutralism
 - Parasitism
 - Commensalism
 - Ammensalism
15. Lichen is the symbiotic association of
- Fungi and Bacteria
 - Fungi and Algae
 - Algae and bacteria
 - Protozoa and Virus
16. Methanogenic bacteria are found in
- Rumen of cattle
 - Epidermal layer of cattle
 - Acidophiles
 - Fungi
17. The process of conversion of soil NO_3^- to N_2 is called
- Nitrification
 - Denitrification
 - Ammonification
 - Nitrogen fixation
18. Bioremediation is.....
- Inoculating the soil with certain microbes that can degrade the toxic organic compounds
 - Plant cover to prevent surface soil heating
 - Plants to take up and accumulate the pollutant so that it can be removed when plant is harvested
 - None of the above
19. Which among the following are included in xenobiotics
- Fertilizers
 - Food additives
 - Environmental pollutants
 - All of the above
20. Xenobiotics are.....
- Another form of antibiotics
 - A form of nutrient
 - Nutrient which kill the gut harmful microbes
 - Anything that is a foreign particle and enter the body through different routes

(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

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

1. What is the Nitrogen Cycle? Describe the steps in detail with diagrams 10
2. What is meant by potable water? How does potable water relate to our health? Also briefly describe the various contamination sources for potable water. 3+4+3
=10
3. Define Solid Waste. What are the different types of solid waste? Describe in detail the different methods of solid waste disposal 2+3+5
=10
4. What are Coliform bacteria? What are its characteristics? Briefly explain the significance of testing coliforms in water samples. 3+5+2
=10
5. Explain in term of its various zones, how marine ecosystem differs from fresh water ecosystem? 10
6. What do you mean by Diazotrophy and Diazotrophs? Explain briefly the mechanism of symbiotic N₂ fixation. 3+7=10
7. Explain various types of microbes-animal interactions with suitable examples. 10
8. Briefly define the terminology with a suitable example 2×5=10
(a) Holophile (b) Thermophile (c) Psychrophile
(d) Endolith (e) Acidophile

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