

B.Sc. MICROBIOLOGY
FOURTH SEMESTER
ENVIRONMENTAL MICROBIOLOGY
BMB-402
[USE OMR SHEET FOR OBJECTIVE PART]

SET
B

Duration: 3 hrs.

Full Marks: 70

(Objective)

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

- Which among the following are siderophore?
 - Indole acetic acid
 - Nitrogenase
 - Ferrichrome
 - All of the above
- Virulence gene D1 and D2 is associated with:
 - Phosphorylates other associated gene
 - Excise a separate region of Ti Plasmid
 - Act as a bridge
 - Integration of the host genome
- The association which involves the exchange of nutrients between two species is referred to as:
 - Mutualism
 - Parasitism
 - Commensalism
 - Antagonism
- Hartig Net are associated with:
 - Hyphae on outer side of the sheath
 - Hyphae on inner side of the sheath penetrate within cortical cells
 - Hyphae associated with coiling of the root tip
 - Hyphae associated with formation of anaerobic conditions on the cortical cells
- The range of mesosphere is:
 - 0-12 kms
 - 700- 10,000 kms
 - 12-50 kms
 - 50-80 kms
- Which is the most productive zone in a lake?
 - Littoral zone
 - Limnetic zone
 - Profundal zone
 - Benthic zone
- Which among the following are acidophilic microbes?
 - Thiobacillus*
 - Lactobacillus*
 - Nitrozomonas*
 - All of the above
- Which among the following is associated with oxidation of FeSO_4 to $\text{Fe}_2(\text{SO}_4)_3$?
 - Thiobacillus ferrooxidans*
 - Scenedesmus obliquus*
 - Pseudomonas* sp.
 - Trichoderma* sp.
- The sequence for biodegradation of organic materials in anaerobic digestion is:
 - Methanogenesis-Hydrolysis-Acidogenesis
 - Hydrolysis-Acidogenesis-Methanogenesis
 - Methanogenesis-Acidogenesis-Hydrolysis
 - Acidogenesis-Hydrolysis-Methanogenesis

10. Which of the following is employed to remove suspended solids in tertiary treatment?
- GAC
 - Trickling filter
 - Activated sludge
 - Anaerobic digester
11. The average grams of microbes forest soil contains:
- 4×10^5
 - 8×10^5
 - 8×10^1
 - 4×10^7
12. The quorum sensing signal molecule in gram negative bacteria is:
- Ethyl methyl ketone
 - Acyl homoserine lactone
 - Methyl guanosine
 - Propyl cortisone
13. Anthrocyanin is associated with:
- Sweet odour of the plant
 - Red color of the buds
 - Nitrogen fixation
 - All of the above
14. Where is ozone concentration highest?
- Trophosphere
 - Stratosphere
 - Biosphere
 - Mesosphere
15. Meteore are burnt in:
- Trophosphere
 - Thermosphere
 - Exosphere
 - Mesosphere
16. DNA varicella-zoster virus belongs to family:
- Herpesviridae
 - Paramyxoviridae
 - Poxviridae
 - Anelloviridae
17. Which of the test is based on the assumption that no coliform should be present in 100 mL of drinking water?
- Multiple Tube Fermentation Test
 - Presence-Absence Test
 - Colilert Defined Substrate Test
 - Membrane Filter Technique
18. Which microbe among the following is associated with production of buoyant intracellular gas vacuoles?
- Pseudomonas diminuta*
 - Acinetobacter spp.*
 - Halobacterium salinarium*
 - Pseudomonas putida*
19. Which among the following are indicator fungi?
- Agaricus campestris*
 - Penicillium notatum*
 - Aspergillus niger*
 - All of the above
20. Hydrolases are enzyme catalyzes:
- Redox reaction, where electron are transfered
 - Hydrolysis of chemical bonds in molecules
 - Aids in transfer of a functional group
 - Cleavage of chemical bonds without addition of water

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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. Discuss the significance of air microflora in human health, hospitals and industries. | 10 |
| 2. Discuss elaborately any two airborne viral diseases. | 10 |
| 3. Briefly define the terminology with a suitable example:
a) Octopine
b) Ammensalism
c) Rhizosphere
d) Commensalism
e) Antibiosis | 2×5=10 |
| 4. Explain the terminology droplet nuclei. Discuss briefly the tuberculosis and how is TB disease treated. | 2+8=10 |
| 5. What are the molecular adaptations of microbes towards osmotic pressure and towards various temperatures? | 10 |
| 6. What do you mean by Biomagnification? Explain the procedure in recovering of Copper metal. | 2+8=10 |
| 7. Describe the methods to detect the presence of coliforms in water. Explain the significance of index organisms. | 5+5=10 |
| 8. Explain anaerobic digester with a diagram. Describe an aerobic attached growth treatment process with a diagram. | 5+5=10 |

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