REV-01
BMB/01/05

2022/12

B.Sc. MICROBIOLOGY
THIRD SEMESTER (REPEAT)
AGRICULTURAL MICROBIOLOGY
BMB-304

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Which of the following is the most fertile soil?
   a. Loamy soil
   b. Black soil
   c. Sandy soil
   d. Red

2. Which element is humus especially rich in?
   a. Carbon
   b. Nitrogen
   c. Gold
   d. Oxygen

3. Irish Famine occurred due to:
   a. Brown spot of rice
   b. Ergot poisoning
   c. Late blight of potato
   d. Coffee rust

4. Which one of the following can solubilize phosphate?
   a. *Rhizobium*
   b. *Azospirillum*
   c. *Azolla*
   d. *Vesicular ArbuscularMycorrhiza*

5. Which of the following is used as a biocontrol agent against caterpillars of butterflies?
   a. *Trichoderma*
   b. *Streptococcus*
   c. *Bacillus Thuringiensis*
   d. *Saccharomyces cerevisiae*

6. The aerobic digestion of sewage is utilized in the production of:
   a. Biofuel
   b. Biomass
   c. Synthetic fuel
   d. Silage

7. This is also called a biogas:
   a. Biobutanol
   b. Biodiesel
   c. Bioethanol
   d. Biomethane

8. The term "transgenic" was first used by:
   a. Boyer and Cohen
   b. Gordon and Ruddle
   c. Franklin Costantini
   d. Elizabeth Lacy

9. Viruses can be isolated from clinical samples by cultivation in the following except:
   a. Tissue culture
   b. Chemically defined media
   c. Embryonated eggs
   d. Animals

10. What is the scientific study of soil called?
   a. Entomology
   b. Ornithology
   c. Earth studies
   d. Pedalogy

11. Which of the following is incorrectly matched?
    a. Alnus – *Frankia*
    b. Alfalfa – *Rhizobium*
    c. Nitrogen fixer – *Anabaena*
    d. Mycorrhiza – *Rhodospirrilum*

12. Pick the correct statement.
    a. Legumes do not fix nitrogen
    b. Legumes fix nitrogen independent of bacteria
    c. Legumes fix nitrogen through bacteria in their roots
    d. Legumes fix nitrogen through bacteria in their leaves

13. In nitrification, ammonia is converted to:
    a. Nitrogen
    b. Nitrate
    c. Nitrous oxide
    d. Nitrite

14. Nitrogen is absorbed by the plants in the form of:
    a. Ammonium
    b. Nitrite
    c. Nitrate
    d. All

15. Indole-3-Acetic acid is produced by:
    a. Silicate solubilizing bacteria
    b. Potassium solubilizing bacteria
    c. Methanogens
    d. Methanotrphs

16. Methane oxidation occurs in presence of:
    a. Methanogens
    b. Methanotrophs
    c. Acidogens
    d. Both (b) and (c)

17. Rust of wheat is caused by:
    a. Fungi
    b. Bacteria
    c. Virus
    d. Protozoans

18. Antinutritive factor in soyabean is due to:
    a. Raffinose
    b. Stachyose
    c. Lysine
    d. Both (a) and (b)

19. Second generation biofuels are fuels made from:
    a. Food crops
    b. Woody biomass
    c. Algae
    d. Solar fuels

20. Cytoplasmic polyhedrosis virus develops in:
    a. Cytoplasm
    b. Host cell nuclei
    c. Either nuclei or cytoplasm
    d. Epidermis

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(Descriptive)

Time : 2 hr. 30 mins. **Marks : 50**

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

1. Explain in detail the mechanism of biocontrol with diagrams. 10
2. What is disease triangle and disease cycle? Explain the steps in a disease cycle. 4+6=10
3. Write short notes on: 5+5=10
   a) Methods of transfection to create transgenic animals.
   b) Creation of golden rice.
4. Explain in detail the process of bioethanol production. 10
5. Explain the formation of soil. Describe the soil profile with a diagram. 10
6. Explain soil respiration and regulation of soil respiration. Write a brief note on microbial production of methane in soil. 5+5=10
7. Describe hemicellulose degradation with the enzymes responsible for mineralization. Explain the process of nitrogen mineralization. 5+5=10
8. Write short notes on: 5+5=10
   a) Difference between symbiotic and non-symbiotic biofertilizers.
   b) Mechanism of action of PGPRs.

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