(6 pages) Reg. No. : .....

Code No. : 30549 E **Sub. Code : CMMI 51**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

Microbiology – Core

ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

(For those who joined in July 2021–2022)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. What is the reason for the reduction in dissolved oxygen?
   (a) Bio-magnification
   (b) Eutrophication
   (c) Extinction
   (d) Pollution

2. Which of the following is /are air borne disease?
   (a) Tuberculosis (b) Common cold
   (c) Pneumonia (d) All of the above

3. Activated sludge process degrade organics and
   (a) Improve nutrients
   (b) Remove nutrients
   (c) Remove odor
   (d) Remove taste

4. Which of the following is the test to determine amount of oxygen needed to oxidize all pollution materials?
   (a) BOD
   (b) COD
   (c) Botanical oxygen demand
   (d) Physical oxygen demand

5. Which of the following is an example of pollutants whose concentration increases in each trophic level?
   (a) Potassium (b) Glucose
   (c) DDT (d) Nitrogen

6. Biomagnifications is a well known phenomenon for
   (a) Mercury (b) DDT
   (c) Silver (d) Both (a) and (b)

7. What is the main function of microbial communities in the phyllosphere?
   (a) Protection against pathogens
   (b) Nutrient cycling
   (c) Plant growth promotion
   (d) All of the above

8. Late blight of potato is caused by
   (a) *Claviceps purpurea*
   (b) *Phytophthora infestans*
   (c) *Albugo candidans*
   (d) *Xanthomonas citri*

9. All the following are free living N_2 fixers except?
   (a) Rhizobium (b) Azotobacter
   (c) Rhodospirillium (d) Clostridium

10. The free living fungus *Trichoderma* can be used for
    (a) Killing insects
    (b) Biological control of plant diseases
    (c) Controlling butterfly caterpillars
    (d) Producing antibiotics

PART B — (5 × 5 = 25 marks)

Answer ALL questions, by choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write short notes on microbiological sources of air pollution.

Or

(b) What is potable water? Write about its composition.

12. (a) Write about the characterization of liquid wastes.

Or

(b) Discuss about the role of Cyanobacteria in agriculture.

13. (a) Write about degradation of pesticides.

Or

(b) Bring out the applications of biosensors in environmental monitoring.

14. (a) Give a brief account on various types of soil microbes and their importance.

Or

(b) Discuss the interactions of microbes with plants.

15. (a) Explain the salient features of Rhizobium.

Or

(b) Write the method of application of Azolla in paddy field.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, by choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give a detailed account on the assessment of air quality standard.

Or

(b) Elaborate waterborne diseases and their control measures.

17. (a) Explain in detail about activated sludge process.

Or

(b) Describe the types of solid waste treatment.

18. (a) Write about the degradation of xenobiotics.

Or

(b) Elaborate the bioremediation of contaminated soil and marine oil pollutants.

19. (a) Discuss about carbon cycles and write about its importance in atmosphere.

Or

(b) Write about the etiology, symptoms and control measures of black stem rust of wheat.

20. (a) Explain the process of root nodule formation with appropriate diagram.

Or

(b) Discuss in detail about biological symbiotic nitrogen fixation.

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