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Reg. No. :

Code No. : 10556 E Sub. Code : CMMI 51

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2024.

Fifth Semester

Microbiology – Core

ENVIRONMENTAL AND AGRICULTURAL
MICROBIOLOGY

(For those who joined in July 2021-2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What happens when phosphorus, nitrates and detergents in water lead to acceleration in the growth of algae?
 - (a) Extinction
 - (b) Eutrophication
 - (c) Increase in the number of fishes
 - (d) Increase in the number of aquatic plants

2. Which type of hepatitis spreads through polluted water?
 - (a) Hepatitis A only
 - (b) Hepatitis B only
 - (c) Hepatitis C
 - (d) Hepatitis A and E
3. Which chemical is added to the oxidation pond to avoid bad odor?
 - (a) Calcium chloride
 - (b) Sodium nitrate
 - (c) Potassium chloride
 - (d) Silver nitrate
4. Which of the following is not used as a media for trickling filters?
 - (a) Sand
 - (b) Geo textiles
 - (c) Gravel
 - (d) Paper
5. Which of the following fungi is / are known to grade DDT insecticide?
 - (a) *Aspergillus niger*
 - (b) *Mucor alleranans*
 - (c) *Pencillium spp*
 - (d) All of the above

6. Which of the following is the most common bacteria used for bioleaching?

- (a) Spirillum (b) Coccus
(c) Streptococcus (d) Bacillus

7. Alluvial soil is rich in _____ macro nutrient?

- (a) Phosphorus (b) Nitrogen
(c) Potassium (d) Zinc

8. Black (stem) rust of wheat is caused by?

- (a) *Claviceps purpurea*
(b) *Puccinia graminis*
(c) *Alternaria solani*
(d) *Xanthomonas oryzae*

9. Azolla has a symbiotic association with _____?

- (a) Rhizobium
(b) Anabaena
(c) Nostoc
(d) Azospirillum

10. *Trichoderma harzianum* has proved to be useful micro organism for _____?

- (a) Gene transfer in higher plants
(b) Biological control of soil borne plant pathogens
(c) Bio remediation of contaminated soil
(d) Reclamation of waste lands

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Write short note on aero microbiology.

Or

(b) Explain about purification of water.

12. (a) Write about the importance of COD.

Or

(b) Write note on trickling filter.

13. (a) Explain the microorganism based biosensors.

Or

(b) Write the process of bioleaching and its importance.

14. (a) Write about the properties of soil.

Or

(b) Explain the disease of citrus canker.

15. (a) Explain in brief notes on nitrogen fixation.

Or

(b) List out the advantages of PGPR.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Give a brief account on air – borne transmission of harmful micro organisms.

Or

(b) Explain in detail about fresh water micro flora.

17. (a) Discuss about the treatment of liquid wastes.

Or

(b) Explain the methods of aerobic treatment of waste water.

18. (a) Describe the influences of ecological factors on the effects of toxicity.

Or

(b) Explain the global toxicity testing purpose and importance of bioassay estimation of LC_{50} .

19. (a) Brief out the factors influencing microbial population in soil.

Or

(b) Elaborate the symptoms, disease cycle and control measures of late blight of potato.

20. (a) Elaborate the mass cultivation of phosphate solubilizers.

Or

(b) Give a detailed account on Biopesticides.
