

(6 pages)

Reg. No. :

Code No. : 7549

Sub. Code : ZMBM 33

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

Third 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 :

- _____ play a key role in the transformation of rock to soil.
(a) Cyanobacteria
(b) Pectin decomposing bacteria
(c) Nitrifying bacteria
(d) Denitrifying bacteria

- The groups of bacteria which have the ability to fix nitrogen from air to soil are _____.
(a) Symbiotic (b) Non symbiotic
(c) Both (a) and (b) (d) None of these
- Leghaemoglobin takes part in,
(a) Energy release
(b) Stimulating growth of Rhizobium
(c) Protecting nitrogenase
(d) N₂ absorption
- Single super phosphate (SSP) was first manufactured by _____.
(a) Lawes J.B (b) Stuart John
(c) Frank A.B (d) All of the above
- Soil organic matter is a good indicator of _____.
(a) Biological healthy (b) Chemical health
(c) Physical Health (d) All of the above
- Which of the following type (s) of Personal Protective Equipment (PPE) is frequently used?
(a) Safety glasses (b) Gloves
(c) Lab Coats Apron (d) All the above

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- Which among the following is entomopathogenic microorganism?
(a) *Bacillus thuringiensis*
(b) *Bacillus cereus*
(c) Both (a) and (b)
(d) None of the above
- Heterocyst contains enzyme,
(a) Pectinase (b) Cellulase
(c) Nitrogenase (d) Phosphorylase
- Biofertilizers include,
(a) Cow dung manure and farmyard waste
(b) A quick growing crop ploughed back
(c) BGA/Anabaena and Azolla
(d) All of the above
- A neem product used as insect repellent
(a) Azadirachtin (b) Parathion
(c) Retenone (d) Endrin

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PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

- (a) Define soil microbiology and add note on soil structure and profile.
Or
(b) Illustrate the carbon cycle with suitable diagrams.
- (a) Explain the solid and liquid impingement methods of assessing the air quality.
Or
(b) Explain the droplet nuclei and aerosol.
- (a) Appraise the quality of water by microbial analysis.
Or
(b) Discuss – Potability of water determined by microbiological analysis.
- (a) Define Rhizosphere and add note on its importance.
Or
(b) Define Biofertilizers and add note on its role in agriculture.

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15. (a) Define Transgenic plants and How they are helpful for crop management?

Or

(b) What are the viruses functioning as bio control agents?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Write an essay about the various stages involved in the nitrogen cycle with draw a neatly labelled cycle.

Or

(b) List out the factors affecting the microbial community in soil.

17. (a) Elaborately illustrate the bacterial airborne infections.

Or

(b) Explain the general methods of preventing the airborne transmission of microbes.

18. (a) Write an essay on water pollution.

Or

(b) Define water borne diseases.

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19. (a) Elaborately explain the Algal Biofertilizers.

Or

(b) Explain R/S ratio and Rhizoplane.

20. (a) Write an essay on Bacterial leaf blight of paddy.

Or

(b) Define stem rust of wheat and add a note on symptoms, etiology, lifecycle and management.

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