

(6 pages)

Reg. No. :

Code No. : 7546

Sub. Code : ZMBE 21

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

Second Semester

Microbiology – Elective

BIODEGRADATION AND BIOREMEDIATION

(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. Cellulose constitutes the important part of plant cell called _____.
- (a) Cell wall (b) Cell membrane
(c) Mitochondria (d) Golgi complex

2. The microorganisms secrete an enzyme which helps in the digestion of cellulose known as _____.
- (a) Cellulose (b) Catalase
(c) Sucrase (d) Amylase
3. _____ are isolated from petroleum contaminated soil proved to be the potential organism for hydrocarbon degradation?
- (a) Gordonia (b) Aeromicrobium
(c) Dietzia (d) Flavobacterium
4. _____ is capable of utilizing crude oil and a mixed hydrocarbon substrate and exhibited extensive degradation of n-alkanes and isoalkanes.
- (a) Prototheca zopfi (b) Vibrio
(c) Salmonella (d) Shigella
5. Which of the following is the most common bacteria used for bioleaching?
- (a) Rhodotoruia (b) Straphylococcus
(c) Bacillus (d) Streptococcus

Page 2

Code No. : 7546

6. Which one of the following is not include in the mechanism of bioleaching?
- (a) Acidolysis (b) Complexolysis
(c) Redoxolysis (d) Hydrolysis
7. Bioaugmentation involves _____.
- (a) Eliminating sludge
(b) Plants usage for bioremediation
(c) Addition of microbes to a clean up site
(d) Bioventing
8. Which cleanup approach includes removal of groundwater or soil from its natural setting to permit for bioremediation.
- (a) Bioaugmentation
(b) In situ bioremediation
(c) Ex-situ bioremediation
(d) Phytoremediation
9. A well oxidized sewage contain nitrogen mainly as _____.
- (a) Nitrates (b) Nitrites
(c) Free ammonia (d) None of these

Page 3

Code No. : 7546

10. The maximum temperature required for vermicomposting.
- (a) 20°C to 25°C (b) 25°C to 30°C
(c) 30°C to 35°C (d) 35°C to 40°C

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Discuss about biodegradation process.
- Or
- (b) Elaborate notes on hemicellulose degradation.
12. (a) How does the oil spills are stimulated for biodegradation?
- Or
- (b) Write a notes on paper biodegradation.
13. (a) How radionucleotide waste removed from the effluent?
- Or
- (b) Discuss about Biomagnifications.

Page 4

Code No. : 7546

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14. (a) Bioremediation constrains and priorities – Explain.

Or

(b) Explain about exists bioremediation.

15. (a) Discuss about herbicide degradation.

Or

(b) How solid wastes can be treated using microorganisms?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Write about heterotrophic microbial population in terrestrial ecosystems.

Or

(b) Discuss in detail about cellulose degradation.

17. (a) Describe the process of paint biodegradation.

Or

(b) Explain in detail about textile products biodegradation.

Page 5

Code No. : 7546

18. (a) How do metals are recovered from ores?

Or

(b) Write about metal sulfides precipitation.

19. (a) Give a detail account on bioremediation types.

Or

(b) What are the bioreactors used in bioremediation process? Explain.

20. (a) Discuss in detail about halogenated organic solvents degradation using microorganisms.

Or

(b) Write a detail notes liquid waste treatment.

Page 6

Code No. : 7546

