

M.E / M.TECH DEGREE EXAMINATIONS, DEC 2020 (Held during April, 2021)

First Semester

BY18009- Environmental Biotechnology

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Which one of the organism is engineered as superbug?
A. Bacillus subtilis B. Pseudomonas putida C. Pseudomonas denitrificans
D. Bacillus denitrificans
2. The process of extracting metals from the ore containing rocks is termed as
A. Bioremediation B. Biodegradation C. Bioleaching D. Biofiltration
3. Which of the bacteria is considered for biological leaching?
A. T. thiooxidans B. T. ferrooxidans C. Ferrobacillus ferrooxidans
D. all of these
4. An organism that uses energy from chemical reactions to generate ATP and obtains organic compounds from other organisms
A. Photoautotroph B. Photoheterotroph C. Chemoautotroph D. Chemoheterotroph
5. Explain the source of radioactive waste.
6. What are the constituents of the municipal solid waste?
7. Define bioprospecting.
8. Give example of 2 biosensors used for environmental pollution monitoring applications.

PART B - (4 X 16 = 64 marks)

9. (a) Explain in detail about the bioreactor configurations in bioremediation and metabolic pathways present in microbes for biodegradation. (16)
(OR)
(b) Describe in detail about the exsitu and insitu bioremediation techniques employed to degrade the environmental pollutants. (16)
10. (a) What are the goals of environmental monitoring? Explain the techniques employed in this process. (16)
(OR)
(b) How does an activated sludge process function? Explain the design principle of trickling biological filter. (16)

11. (a) Describe the characteristics of any two industrial wastes that are generated and their treatment strategies. **(16)**

(OR)

- (b) Explain in detail about the importance of solid waste management in the treating the hazardous and non-hazardous waste. **(16)**

12. (a) How metagenomics is applied in the field of environmental biotechnology? Explain its applications. **(16)**

(OR)

- (b) Describe the role of bio-fertilizer and vermiculture in improving soil quality. **(16)**