

Roll No. ....

Total Pages : 3

**LMDQ/M-24**

**11404**

**ENVIRONMENTAL BIOTECHNOLOGY**

**Paper : BT-402**

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory.

**Compulsory Question**

1. Explain or define the following :
  - (a) Composition of spent wash.
  - (b) What is a stuck digester?
  - (c) Biogenic methane and environmental pollution.
  - (d) Various sources of hydrocarbon pollution.
  - (e) Why granular sludge processes are called high-rate systems?
  - (f) Indicator organisms.
  - (g) Amflora potatoes.
  - (h) Differentiate between biodeterioration and biodegradation.

**UNIT-I**

2. Define Environmental Biotechnology and discuss prevention of pollution as its essential component.

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3. Write short notes on the following :
- (a) Colilert Test.
  - (b) Management of solid waste as source of energy.
  - (c) Bio-scrubber. 5,6,5

### UNIT-II

4. Write short notes on the following :
- (a) Treatment of distillery effluent.
  - (b) Activated sludge process.
  - (c) UASB reactor. 6,5,5
5. Write short notes on the following :
- (a) Methanogenic bacteria.
  - (b) Effect of pH on stability of anaerobic digestion.
  - (c) Biochemistry of anaerobic digestion of organics. 6,5,5

### UNIT-III

6. (a) Discuss the applications of biosensors in environmental monitoring.
- (b) Microbial cell-based sensors vs enzyme-based sensors. 10,6
7. Describe different types of *in-Situ* and *ex-Situ* bioremediation.

### UNIT-IV

8. Write notes on the following :
- (a) Bio-deterioration of stored plant food materials.

- (b) Genetic engineering of fungal insecticides for improves efficacy against insect pests.
- (c) Phosphate solubilising bacteria. 5.6,5

9. Discuss fungi as bio-insecticides. How efficacy of these insecticides can be enhanced by use of R-DNA technology?

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