

THEORY EXAMINATION (SEM-VI) 2016-17
ENVIRONMENTAL BIOTECHNOLOGY

Time : 3 Hours

Note : Be precise in your answer.

Max. Marks : 100

SECTION - A

1. Attempt the following:

- (a) What is radioactive pollution?
- (b) Define the term environmental biotechnology with reference to the environment and biotechnology. 10 x 2 = 20
- (c) What do you understand by the term minimum national standards for waste disposal (MINAS)?
- (d) Why is MINAS necessary?
- (e) What do you understand by biological pollution?
- (f) List the factors considered for classifying waste materials.
- (g) What is meant by BOD and COD?
- (h) Explain briefly the anaerobic treatment methods of liquid wastes.
- (i) List the factors influencing anaerobic digestion processes.
- (j) What do you understand by the term biomarkers?
- (k) In the trickling filter method, what is 'filter' and how is it achieved?

SECTION - B

2. Attempt any five parts of the following questions:

5 x 10 = 50

- (a) Discuss briefly the working principle of the fluidized bed aerobic reactor system for treating liquid effluents.
- (b) Discuss the effect of particle size on the rate of digestion of a waste material.
- (c) What are the factors governing methane production?
- (d) Discuss the strategies of microbial strain improvement for anaerobic processes.
- (e) How can be the total volatile solids, percent moisture and ash content of any organic agroresidue be determined?
- (f) Define biogas? What is the mechanism of biogas production?
- (g) Briefly discuss the importance of biomarkers and biosensors in pollution monitoring.
- (h) What are the hazardous wastes and what are their sources?
- (i) What are the different methods employed to detect various types of bacteria?

SECTION - C

Attempt any two parts of the following questions:

2 x 15 = 30

3. Derive equation for elemental balance and stoichiometry for cell growth in cell culture system.
4. Define rotating biological contactors (RBC) and explain its working methodology in cleaning polluted wastewater. Why RBC should be preferably used for the secondary treatment of wastewater?
5. Discuss in details with respect to anaerobic treatment of wastewater and landfill bioreactor for solid waste treatment.