

Total number of printed pages-4

53 (FPT 501) FIWM

2017

**FOOD INDUSTRIES WASTE
MANAGEMENT**

Paper : FPT 501

Full Marks : 100

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

Answer any five questions out of seven.

1. (a) Describe the Vermicomposting methods for biological treatment of solid waste and mention its advantages. 8+2
- (b) Is Vermicompost an ideal fertilizer? Justify. 3
- (c) What are hazardous wastes and what are their sources? 3
- (d) What is Biomineralization? 4

Contd.

2. (a) Explain the basic steps involved in the anaerobic digestion methods of solid waste management. 8
- (b) If a municipal corporation generates 2000 ton of garbage containing 30% of moisture and 30% BVS on dry basis and wants to stabilize this aerobically, how many tonnes of air will be required for this purpose theoretically if the empirical formula of the solid waste is $(C_4H_6O_3)_{10}$? 12
3. (a) What is Pyrolysis? State its advantages. 5
- (b) What is Incineration? State its advantages and disadvantages. 5
- (c) Highlight the differences between aerobic and anaerobic composting. 5
- (d) Discuss the various physico-chemical characteristic of waste material ideal for microbial stabilization. 5

4. (a) Discuss about the different water quality parameters of wastewater from food industry. 6
- (b) Differentiate between BOD and COD. 2
- (c) Write in detail about the steps involved in a wastewater treatment plant of a food industry. 12
5. (a) What are the unit operations employed in preliminary treatment of wastewater? Explain in detail. 10
- (b) Define Coagulation and Flocculation. Explain how wastewater is treated by coagulation and flocculation. 2+6
- (c) Name *any two* coagulants. 2
6. (a) What is a Biological Treatment Process? Explain with example. 5
- (b) Write the detail process of activated sludge treatment process. Write the advantages and disadvantages of the process. 5+5+5

7. (a) Write about the by-products generated in fruits and vegetable processing industry. How those by-product can be utilized for the benefit of mankind? 8

Or

Write about the by-product utilization of cereals/grain processing industry for the benefit of mankind.

- (b) Write short notes on : 3×4

- (i) Lagoons
- (ii) RBC (Rotating biological contactor)
- (iii) Trickling filters.