Total No. of printed pages = 3

19/5th Sem/UFET505

2021

FOOD INDUSTRY WASTE MANAGEMENT

Full Marks – 100

Time – Three hours

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

Answer any *five* questions.

1. Answer the following questions :

   (a) What is waste management. What are the 3R's of Waste Management ? 2+3=5

   (b) Classify solid wastes ? 5

   (c) What are the different steps of anaerobic digestion ? 10

2. (a) What is vermicomposting ? Describe the various steps involve in vermicomposting technique. 10

   (b) What is active sludge ? Discuss briefly the major steps involved in Activated Sludge Process (ASP). 10

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3. Write short notes on any *four* (4) of the followings : 5×4=20

(a) Carbon footprint

(b) Greenhouse gases and their impact on the Environment

(c) Incineration

(d) Pyrolysis

(e) Anaerobic composting.

4. (a) What is composting ? Discuss briefly about different types of composting. 10

(b) Estimate theoretically the volume of biogas that can be produced by anaerobic treatment of 1.5 ton of solid waste, by using the following data : 10

Chemical formula of BVS = $C_{60}H_{95}O_{40}N$

Organic material (VS) in solid waste = 80%

Moisture content = 20%

Biodegradable Volatile Solid (BVS) = 95% (Dry basis)

Specific weight of methane is 0.7112 kg/m^3

Specific weight of CO_2 is 1.9607 kg/m^3.

5. (a) Write the advantages and disadvantages of the activated sludge process. 5

(b) Write the advantages and disadvantages of vermicomposting technique ? 5

The 5 days BOD at 200°C of a wastewater is 200 g/lit. What will be the ultimate BOD ? What will be the 10 days demand ? If the bottle had been incubated at 300°C, what would be the 5 days BOD ? 10

6. (a) Describe the working principle of trickle filter (TF) technique for treatment of wastewater. 10

(b) What is rotating biological contactors (RBC) ? Discuss the performance and design aspect of RBC. 10