

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE  
SEMESTER END THEORY EXAMINATION

**B.Tech. (Food Technology)**

[ICAR-Sixth Deans' Committee Recommended Syllabus]

Semester	: II (New)	Term	: Second	Academic Year	: 2024-25
Course No.	: FE-122	Title	: Waste and By-products Utilization		
Credits	: 3(2+1)	Time	: 10:00 to 13:00 hrs.	Total Marks	: 80
Day & Date	: Friday, 27.06.2025				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
  2. All questions from SECTION 'B' are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagram wherever necessary.

**SECTION 'A'**

- Q.1 What is By-product? Explain the types and magnitude of wastes in food industry.
- Q.2 Describe in brief:
- a) The trickling filter
  - b) Effluent treatment
- Q.3 Explain Janata model of biogas plant with its working.
- Q.4 Write in detail about briquettes.
- Q.5 Explain in detail the sand filter and activated carbon filter.
- Q.6 Explain in brief:
- a) Microbiology of waste
  - b) Producer gas generation and utilization
- Q.7 Explain the waste parameters with their importance in waste management.
- Q.8 Write the uses of by-products of rice mill, oil mill and sugarcane industry.
- Q.9 Write short notes on:
- a) Flocculation
  - b) Aerated lagoons
- Q.10 Describe the methods of solid waste disposal. Write the key aspects of food industry compliance with ISO 14001.

**SECTION 'B'**

- Q.11 State True or False:
- 1) Effluent is an out-flowing of water or gas from a natural body of water.
  - 2) Oxidation ditch is a modified form of activated sludge process.
  - 3) Heavy metals are removed by tertiary method of effluent treatment.
  - 4) In vermin-composting, Nitrogen content should be too high.
  - 5) ISO 14001 is the internationally recognized standard for environmental management systems.
  - 6) Ethanol is a biofuel.
  - 7) Municipal waste waters may contain 5-20 mg/l of phosphorous.
  - 8) Rice husk is used in vermicomposting.

(P.T.O.)

Q.12 Fill in the blanks:

- 1) The \_\_\_\_\_ filters are also called as percolating filters.
- 2) \_\_\_\_\_ is the key ingredient in the production of ethanol.
- 3) 'Deenbandhu model' of biogas plant was developed in the year, \_\_\_\_\_.
- 4) The waste hierarchy refers to the '3Rs': \_\_\_\_\_, Reuse and Recycle, which classifies waste management strategies.
- 5) The best size of floc is \_\_\_\_\_.
- 6) The charcoal briquette is made by \_\_\_\_\_.
- 7) COD means \_\_\_\_\_.
- 8) \_\_\_\_\_ are also called as complexing or sequestering agents.

