Hall Ticket No | | | | | | | | | | | Question Paper Code: ACEB52

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal-500043, Hyderabad

B.Tech VIII SEMESTER END EXAMINATIONS (REGULAR) - JUNE 2022
Regulation: R18

ENERGY FROM WASTE

Time: 3 Hours **(Common to CSE | IT)** **Max Marks: 70**

Answer FIVE Questions choosing ONE question from each module
(NOTE: Provision is given to answer TWO questions from any ONE module)
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1. (a) Discuss the process of labour requirement for collection of solid waste. List various types of collection system of solid waste. [BL: Understand| CO: 1|Marks: 7]

   (b) Explain the detail process of recycling of municipal waste in a city. Discuss segregation of waste, size reduction, managing waste in a municipality. [BL: Understand| CO: 1|Marks: 7]

2. (a) Explain the classification of composting technologies and discuss briefly the basic steps involved in the composting practice. [BL: Understand| CO: 1|Marks: 7]

   (b) List out the physical and chemical properties of municipal solid waste(MSW) and explain in detail the composition of MSW. [BL: Understand| CO: 1|Marks: 7]

MODULE – II

3. (a) Explain incineration process with the help of a neat sketch. List out advantages of gasification over incineration. [BL: Understand| CO: 2|Marks: 7]

   (b) How are landfills classified? Discuss the various guidelines for selection of a landfill site in a municipality. [BL: Understand| CO: 2|Marks: 7]

4. (a) Enumerate the term leachate. What problems are posed by leachate and how are they classified? [BL: Understand| CO: 2|Marks: 7]

   (b) What are the design aspects of geo-membranes? Describe the design aspects of geo-synthetic clay liners? [BL: Apply| CO: 2|Marks: 7]

MODULE – III

5. (a) List out two basic biogas digester designs in common use and show the structural illustration of each. [BL: Understand| CO: 3|Marks: 7]

   (b) What is anaerobic digestion? Explain anaerobic digestion of sewage and municipal waste in detail. [BL: Understand| CO: 3|Marks: 7]

6. (a) Discuss about the composition of industrial waste, agro residues and explain the process of its treatment. [BL: Understand| CO: 4|Marks: 7]

(b) Describe the process of direct combustion of MSW refuse derived solid fuel
[BL: Understand| CO: 4|Marks: 7]

MODULE – IV

7. (a) With a neat sketch, explain the process of conversion of waste to energy using Pyrolysis?
[BL: Understand| CO: 5|Marks: 7]

(b) Explain the various thermo-chemical conversion processes. Discuss on environmental benefits of bio-chemical and thermo chemical process [BL: Understand| CO: 5|Marks: 7].

8. (a) Write short notes on direct combustion of Biomass. Discuss about biomass briquetting.
[BL: Understand| CO: 5|Marks: 7]

(b) Differentiate between producer gas and syngas? Explain with neat sketch different gasifies used in thermo chemical conversion? [BL: Understand| CO: 5|Marks: 7]

MODULE – V

9. (a) Explain in detail the process of recycling e-waste? Discuss the process of handling and processing e-waste. [BL: Understand| CO: 6|Marks: 7]

(b) What are the various hazards of e-waste? Discuss in-detail about health hazards and safety hazards related to e-waste. [BL: Understand| CO: 6|Marks: 7]

10. (a) What is global trade in hazardous waste? Explain briefly, how to diminish the e-waste hazard from the world. [BL: Understand| CO: 6|Marks: 7]

(b) Discuss about e-waste legislations. Highlight on government regulations on e-waste management.
[BL: Understand| CO: 6|Marks: 7]

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