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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (CSE Engg.) (Sem.-3)

WASTE TO ENERGY

Subject Code : MTOE-306-18

M.Code : 76517

Date of Examination : 19-12-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.

2. Each question carries TWELVE marks.

1.
 - i) Define and explain the term 'energy resources'. Discuss different ways of their classifications. Mention at least two energy resources in each category.
 - ii) What is the need for extracting energy from waste? Discuss Forest residue briefly.
2.
 - i) What are solid wastes? Explain their effects on environment. Also, discuss main sources of solid wastes.
 - ii) Explain the process of pyrolysis in detail. What are the various types of pyrolysis? Discuss and compare slow and fast pyrolysis methods.
3.
 - i) What is the advantage and disadvantage of various solid treatment techniques like Incineration, Composting, Land filling?
 - ii) State the names of raw biomass from waste and cultivated crops. How biomass conversion takes place?
4.
 - i) Describe the design, construction, operation, advantages and benefits of fluidized bed gasifier giving a neat sketch.
 - ii) Discuss the Equilibrium and Kinetic considerations of gasifier in detail.
5.
 - i) What is the meaning of biomass? Further, discuss its multipurpose utilization.
 - ii) Explain the Biomass gasification process in detail.

6. Compare the following combustors *w.r.t.* design, operational and constructional features :
- a) Fixed bed
 - b) Inclined Grate.
7. i) Explain the meaning of anaerobic digestion and discuss processes involved during anaerobic digestion.
- ii) How is charcoal manufactured? What kind of wood is charcoal made from? How do you make charcoal briquettes?
8. **Write short note on any 2 of the following:**
- a. Thermo Chemical biomass Conversion
 - b. Bio-diesel production
 - c. Biomass Energy Programme
 - d. Bio-Chemical Conversion.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.