

Roll No.

Total No. of Pages : 02

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M.Tech. (CSE) (2018 Batch) (Sem.-3)

WASTE TO ENERGY

Subject Code : MTOE-306-18

M.Code : 76517

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.
 - a) Describe the essentiality for exploration of renewable sources of energy. Discuss in brief limitations of renewable energy.
 - b) *“Waste to Energy (WTE) processes play an important role in the sustainable management of Municipal Solid Waste (MSW) worldwide”*. Comment.
2. Explain the Pyrolysis/gasification-based waste-to-energy (WTE) techniques using appropriate sketches.
3.
 - a) Explain the factors affecting energy recovery from waste. Explain the following three main pathways for conversion of organic waste material to energy - thermochemical, biochemical and physicochemical.
 - b) Explain the procedure for production of valuable pyrolytic oils from mixed municipal solid waste (MSW).
4.
 - a) Explain the working of mass burn incineration for waste incineration with power production giving a neat sketch.
 - b) What are the reactions phases that take place in a digester? Explain them in detail.
5.
 - a) Explain the design, construction and working of fluidized-bed gasifier giving neat sketch.
 - b) Explain the working principle and schematic of the schematic diagram of gasification-engine-generator system giving neat sketch.

6.
 - a) Discuss the properties of biogas. What is the calorific value of biogas? Also discuss the advantages and disadvantages of Biogas.
 - b) What is combustion of biomass? Explain working principle of suspension burner biomass combustion system giving a neat sketch.
7.
 - a) Explain the design, construction and working principle of inclined/sloping grate biomass combustion system giving neat sketch.
 - b) What is biomass in fermentation? Explain the procedure for bioconversion of biomass to mixed alcohol fuels.
8.
 - a) Explain the procedure for production of liquid biofuels including biodiesel, and bioethanol.
 - b) Discuss the health and safety aspects of WTE 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.