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10ME843

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016

Bio – Mass Energy Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1
 - a. What do you mean by Bio – mass? What are the various biomass energy sources? Explain with suitable examples. (10 Marks)
 - b. What are the characteristics of bio – mass? (05 Marks)
 - c. Explain the parameters to influence the Photo – Synthesis. (05 Marks)
- 2
 - a. Explain the working of MSW (Municipal Solid Waste) incineration plant for bio – mass conversion. (10 Marks)
 - b. Explain Palletization process. (10 Marks)
- 3
 - a. Explain Bio – chemical conversion process. (08 Marks)
 - b. Discuss the heat content of various fuels. (06 Marks)
 - c. Explain Briquetting process. (06 Marks)
- 4
 - a. Explain with a neat sketch, the working of Up – draft – type gasifier with reactions involved. (12 Marks)
 - b. Explain Fluidised Bed Gasifiers. (08 Marks)

PART - B

- 5
 - a. Explain the principle of anerobic digestion. (04 Marks)
 - b. Explain the factors influencing the production of bio – gas. (08 Marks)
 - c. With neat sketch, explain the construction and working of Fixed dome type digester. (08 Marks)
- 6
 - a. With neat flow chart, explain the production of ethanol from wood by acid hydrolysis. (10 Marks)
 - b. Calculate the volume of a Fixed – Dome type of biogas digester for the output of two cows and thermal power available from biogas with the following available data :
 Retention time = 30 days ; Dry matter produced = 2kg / day / cow ;
 Biogas yield = 0.22m³/kg of dry matter ; Percentage of dry matter in the cow dung = 18%
 Density of slurry = 1090 kg/m³ ; Burner efficiency = 60% ; Calorific value of biogas = 23MJ/m³. (10 Marks)
- 7
 - a. What is Transesterification? Explain with suitable example. (10 Marks)
 - b. Discuss the effect of use of Bio – diesel in I.C. engines. (10 Marks)
- 8 Write short notes on the following :
 - a. Energy plantation.
 - b. Liquefaction through pyrolysis.
 - c. Co – generation cycle.
 - d. Bio – diesel from Honge seeds. (20 Marks)