

USN

--	--	--	--	--	--	--	--	--	--

06ME843

**Eighth Semester B.E. Degree Examination, June/July 2013**  
**Bio Mass Energy Systems**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Explain the availability of biomass resources. (10 Marks)  
b. What are the characteristics of biomass? (05 Marks)  
c. Explain energy plantation. (05 Marks)
- 2 a. With the help of flow chart, explain the methods of biomass conversion. (10 Marks)  
b. Explain palletization process. (10 Marks)
- 3 a. Explain physical method of energy conversion process. (08 Marks)  
b. Discuss the heat content of various fuels. (06 Marks)  
c. Explain Briquetting process. (06 Marks)
- 4 a. Explain PyroLysis process. (08 Marks)  
b. With a neat sketch, explain the working of Up draft Gasifier. (12 Marks)

**PART – B**

- 5 a. Explain the principle of anerobic digestion. (04 Marks)  
b. What are the factors influencing the production of bio gas? (06 Marks)  
c. With a neat sketch of KVIC digester. Explain the construction and working. (10 Marks)
- 6 a. Explain the process of ethanol production by fermentation. (06 Marks)  
b. What are the applications of biogas? (05 Marks)  
c. Calculate :  
i) The volume of biogas digester suitable for the output of FOUR COWS.  
ii) The power available.  
Retention period is 20 days. Temperature 30°C, dry matter consumed 2 kg/day. Biogas yield is 0.24 m<sup>3</sup>/kg. Burner efficiency 0.6, methane proportion 0.8. Calorific value of methane 28 MJ/m<sup>3</sup>. Density of dry matter in the fluid 50 kg/m<sup>3</sup>. (09 Marks)
- 7 a. What is transesterification? Explain with suitable example. (10 Marks)  
b. Discuss the effect of use of bio diesel in IC engine. (10 Marks)
- 8 Write short note on the following :  
a. Photosynthesis  
b. Digester design consideration.  
c. Brayton cycle  
d. Ethanol as a fuel in automobiles. (20 Marks)

\* \* \* \* \*

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.