Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **VII** |
| **Code :** | **14ME2052** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOMASS ENERGY SYSTEMS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain the various biomass resources in detail. | CO1 | 8 |
| b. | Describe the various thermo-chemical conversion processes. | CO3 | 8 |
| c. | Distinguish between air and steam gasification processes. | CO2 | 4 |
| (OR) | | | | |
| 2. | a. | Explian the biochemical processes in detail? | CO3 | 8 |
| b. | Distinguish between anaerobic digestion and fermentation processes. | CO3 | 4 |
| c. | Explain the working principle of a cross draft gasifier with a sketch? | CO2 | 8 |
| 3. | a. | Describe the method of ethanol production from wood? | CO3 | 8 |
| b. | What is fluidized bed gasifier? Explain. | CO3 | 8 |
| c. | Distinguish between slow pyrolysis and fast pyrolysis processes. | CO3 | 4 |
| (OR) | | | | |
| 4. | a. | Describe the method of methanol production from biomass waste? | CO3 | 8 |
| b. | Explain the working principle of a floating drum type biogas plant? | CO3 | 8 |
| c. | What are the advantages and disadvantages of fixed dome type biogas plant? | CO2 | 4 |
| 5. | a. | What are the factors affecting the biogas yield? Explain. | CO3 | 8 |
| b. | Explain the types of fluidization with sketches? | CO2 | 8 |
| c. | Explain the effect of additives on biogas yields? | CO3 | 4 |
| (OR) | | | | |
| 6. | a. | Explain the performance of biogas in CI engine? | CO3 | 8 |
| b. | How syn gas is produced? Explain. | CO2 | 4 |
| c. | Explain the performance of wood gas in CI engine? | CO3 | 8 |
| 7. | a. | Write a brief note on design of biogas digester based on end user requirements? | CO3 | 8 |
| b. | What is digester sizing? Explain. | CO3 | 4 |
| c. | Explain the method of biogas purification with a sketch? | CO2 | 8 |
| (OR) | | | | |
| 8. | a. | What is scaling of biogas plants? Explain. | CO2 | 8 |
| b. | Write a brief note on design of biogas digester based on methane production rate? | CO3 | 8 |
| c. | What is hydraulic retention time? Explain. | CO1 | 4 |
|  | | **Compulsory:** |  |  |
| 9. | a. | What are the benefits of biomass energy? | CO3 | 4 |
| b. | What are the applications of biogas? Explain. | CO3 | 8 |
| c. | Describe the world biomass energy consumption pattern? | CO3 | 8 |

ALL THE BEST