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 :** | **2016-17 ODD** |
| **Code :** | **14ME3036** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOMASS ENERGY** | **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. | Describe the pyrolysis process in detail. | CO2 | 8 |
| b. | Write the various biomass conversion processes. | CO3 | 8 |
| c. | Differentiate between air and steam gasification processes. | CO2 | 4 |
| (OR) | | | | |
| 2. | a. | Describe the anaerobic digestion process in detail. | CO3 | 8 |
| b. | What is fermentation process?Explain. | CO3 | 4 |
| c. | Describe the working principle of a down draft gasifier with a sketch. | CO2 | 8 |
| 3. | a. | Explain the method of ethanol production from sugarcane. | CO3 | 8 |
|  | b. | What is fluidized bed gasifier? Explain. | CO3 | 8 |
|  | c. | Differentiate between flash pyrolysis and fast pyrolysis processes. | CO3 | 4 |
| (OR) | | | | |
| 4. | a. | Explain the method of methanol production from syn gas. | CO3 | 8 |
|  | b. | Describe the working principle of a fixed dome type biogas plant. | CO3 | 8 |
|  | c. | What are the advantages and disadvantages of floating drum type biogas plant? | CO2 | 4 |
| 5. | a. | What are the factors affecting biogas yield? Explain. | CO3 | 8 |
|  | b. | Describe the biogas yield from dry dung cake. | CO2 | 8 |
|  | c. | Describe the effect of additives on biogas yields. | CO3 | 4 |
| (OR) | | | | |
| 6. | a. | Describe the performance of biogas in SI engine. | CO3 | 8 |
|  | b. | How producer gas is produced? Explain. | CO2 | 4 |
|  | c. | Describe the performance of wood gas in SI 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. | Describe the method of biogas compression 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 are the raw materials used for biogas production? | CO1 | 4 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Explain the power production from municipal solid waste. | CO3 | 8 |
|  | b. | Describe the method of electricity production from distillery waste. | CO3 | 8 |
|  | c. | Write a brief note on environmental impact of biomass power plant. | CO3 | 4 |

ALL THE BEST