

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



# Karunya 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

**Code : 14ME3036**  
**Sub. Name : Biomass Energy**

**Semester : I**  
**Duration : 3hrs**  
**Max. marks : 100**

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

| 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     |
| <b><u>Compulsory:</u></b> |          |   |                |       |
| 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