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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **19CH3002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WASTE TO ENERGY** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Explain the industrial waste management methods used in India. | CO1 | 6 |
| b. | Describe the Chemical properties of Municipal Solid waste? Find out total energy of MSW. | CO1 | 10 |
|  |  |  |  |  |
| 2. | a. | Describe the catalysis mechanism for heterogeneous catalyst with schematic diagram. | CO2 | 8 |
| b. | How to synthesis the catalyst using top down and bottom up methods? | CO2 | 8 |
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| 3. | a. | Explain the sustainable technology applied in Biodiesel. | CO3 | 10 |
|  | b. | List out the Physical properties of Biodiesel compared with corresponding oil. | CO3 | 6 |
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| 4. | a. | Highlight the advantages of Biogas as a fuel. | CO4 | 6 |
|  | b. | Describe the construction and working model of floating dome biogas plant. | CO4 | 10 |
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| 5. | a. | Explain the manufacturing methods of charcoal. | CO5 | 10 |
|  | b. | Highlight the physical and chemical properties of pyrolytic oil. | CO5 | 6 |
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| 6. | a. | Calculate the energy content of solid waste having following composition using modified Dulongs formula:  Carbon is 56.5%, Hydrogen is 14.3%, Oxygen is 31.1%, Nitrogen 07%, Sulfur is 0.3% and Ash is 7.5%. | CO1 | 8 |
|  | b. | Describe the Proximate analysis of Solid waste. | CO1 | 8 |
|  |  |  |  |  |
| 7. | a. | Write short on catalytic poisioning and autocatalyst. | CO2 | 8 |
|  | b. | How the waste material act as super capacitor. Explain with a research example. | CO2 | 8 |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Briefly discuss the construction and working method for fixed bed gasifier. | CO6 | 12 |
|  | b. | Highlight the advantages and disadvantages for fluidized bed gasifier. | CO6 | 8 |
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