**Code No.** **6OE5204EE**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**M.E II-Semester (Regular) Examination, September-2023**

**Subject: WASTE TO ENERGY**

**Time: 3 hours Max.Marks:60**

**Note: Missing data, if any, maybe suitably assumed.**

**PART-A**

**Answer All the questions. (05X2M=10M)**

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| --- | --- | --- | --- | --- |
| **Q.No** | **Questions** | **Marks** | **CO** | **BTL** |
| **1 a** | Define the forest residue and explain the methods to use forest residue? | **2** | **CO1** | **BL1** |
| **b** | What is the working principle of gasifier? | **2** | **CO2** | **BL1** |
| **c** | List out the disadvantages of biomass stove? | **2** | **CO3** | **BL3** |
| **d** | What are the classifications of biomass waste? | **2** | **CO4** | **BL1** |
| **e** | How is urban waste converted into energy? | **2** | **CO5** | **BL1** |

**PART-B**

**Answer Any Five questions. (05X10M=50M)**

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| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| 2 | a | What is pyrolysis mechanism of biomass materials? What are the different types of biomass pyrolysis? | **10** | **CO1** | **BL1** |
| b | Explain the Challenges and Potentials to Sustainable Charcoal Production? |  | **CO1** | **BL2** |
| 3 | a | Explain Biomass Conversion Technologies? | **10** | **CO2** | **BL5** |
| b | What is the process of thermal heating for gasification? |  | **CO2** | **BL1** |
| 4 | a | What are the steps involved in the design of a fluidized bed reactor? | **10** | **CO3** | **BL1** |
| b | Explain the Equilibrium modelling of gasification? |  | **CO3** | **BL2** |
| 5 | a | Explain Direct Combustion processes? | **10** | **CO4** | **BL2** |
| b | What are the properties and application of biogas? |  | **CO4** | **BL1** |
| 6 | a | What are 2 sources of biomass for the production of ethanol? | **10** | **CO5** | **BL1** |
| b | **Explain Government incentives and Subsidies for Biomass Energy Production?** |  | **CO5** | **BL5** |
| 7 | a | Define the term Industrial Waste? Explain the Effects of Industrial Waste? | **10** | **CO1** | **BL2** |
| b | **Explain the Advantages of downdraft over updraft** |  | **CO2** | **BL2** |
| 8 | a | Explain the advantages biomass fuel? | **10** | **CO3** | **BL2** |
| b | **How does a biogas system really work?** |  | **CO4** | **BL1** |
| 9 | a | How are the products of AD(Anaerobic digestion) used? | **10** | **CO5** | **BL1** |
| b | Explain the Schematic of inclined grate combustion chamber |  | **CO3** | **BL2** |

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