**ME2**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Common to CE, CS, DS, EC, IT & EI** | | |
| **Seventh Semester** | **Renewable Energy Sources** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | List the various non-conventional energy sources | CO1 | L1 | 1M |
|  | b) | Write brief note on solar collector | CO1 | L1 | 1M |
|  | c) | Define solar constant | CO1 | L1 | 1M |
|  | d) | What is meant by extra terrestrial radiation | CO1 | L1 | 1M |
|  | e) | State the Betz law | CO2 | L1 | 1M |
|  | f) | What are the advantages of geothermal energy | CO2 | L1 | 1M |
|  | g) | Classify wind turbines | CO2 | L1 | 1M |
|  | h) | Mention the major applications of a wind power | CO2 | L1 | 1M |
|  | i) | What is meant by anaerobic digestion | CO3 | L1 | 1M |
|  | j) | Define tidal range | CO3 | L1 | 1M |
|  | k) | What is meant by incineration | CO3 | L1 | 1M |
|  | l) | What are important gas constitutes in biogas | CO4 | L1 | 1M |
|  | m) | Define fuel cell. | CO4 | L1 | 1M |
|  | n) | Write the benefits of a fuel cell. | CO4 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Explain flat plate collector with its merits and demerits | CO1 | L2 | 7M |
|  | b) | Describe the applications of solar energy | CO1 | L2 | 7M |
| **(OR)** | | | | | |
| 3 | a) | Explain central tower receiver with its merits and demerits | CO1 | L2 | 7M |
|  | b) | Explain how solar radiation is measured and data is obtained | CO1 | L3 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Elaborate the factors to be considered while selecting a site for wind turbine plant | CO2 | L2 | 7M |
|  | b) | Draw a vertical axis wind turbine and discuss the functions of components | CO2 | L2 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Describe vapour dominated geothermal power plant | CO2 | L2 | 7M |
|  | b) | Explain liquid dominated single flash steam power plant with neat diagram | CO2 | L2 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Explain closed cycle OTEC power plant | CO3 | L2 | 7M |
|  | b) | Discuss the double basin tidal power plant | CO3 | L2 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Describe downdraft gasifier with sketch | CO3 | L2 | 7M |
|  | b) | Explain bio chemical biomass conversion | CO3 | L2 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Describe phosphoric acid fuel cell | CO4 | L2 | 7M |
|  | b) | Explain open cycle MHD plant | CO4 | L2 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Explain fixed dome type biogas plant with neat diagram | CO4 | L2 | 7M |
|  | b) | Classify fuel cells and state its merits and demerits | CO4 | L2 | 7M |

