**18MEI03**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **April,2023** | **Institutional Elective (Common to all branches)** | | |
| **Eighth Semester** | **Non-Conventional Energy Sources** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | List out environmental impact of solar power | CO1 | L2 | 1M |
|  | b) | What is principle of Photovoltaic cell? | CO1 | L1 | 1M |
|  | c) | What are the advantages of geo thermal energy? | CO2 | L1 | 1M |
|  | d) | What is anaerobic digestion? | CO2 | L1 | 1M |
|  | e) | Write the advantages of OTEC energy | CO3 | L2 | 1M |
|  | f) | List the advantages of wave energy generation | CO3 | L2 | 1M |
|  | g) | Write about anaerobic digestion? | CO3 | L2 | 1M |
|  | h) | What are important gas constitutes in biogas | CO4 | L2 | 1M |
|  | i) | What is the difference between MHD generators and conventional generators? | CO4 | L1 | 1M |
|  | j) | Define fuel cell. | CO4 | L2 | 1M |
| **Unit -I** | | | | | |
| 2. | a) | Discuss the following: i) solar irradiance ii) solar constant iii) extra-terrestrial radiations iv) terrestrial radiations | CO1 | L3 | 5M |
|  | b) | Compare and contrast extraterrestrial and terrestrial solar radiation | CO1 | L4 | 5M |
|  |  | **(OR)** |  |  |  |
| 3. | a) | With neat diagram explain Flat plate collector | CO1 | L2 | 5M |
|  | b) | Discuss various types of energy conversion from solar radiation. | CO1 | L3 | 5M |
|  |  | **Unit -II** |  |  |  |
| 4. | a) | List out the advantages and disadvantages of Horizontal axis wind mills and Vertical axis wind mills. | CO2 | L2 | 5M |
|  | b) | Explain Betz criterion? | CO2 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 5. | a) | Describe various types of Geothermal sources of energy | CO2 | L3 | 5M |
|  | b) | Describe with necessary diagrams, the principle of working of geothermal power plant | CO2 | L3 | 5M |
|  |  | **Unit -III** | |  |  |
| 6. | a) | Explain the working principle of open cycle OTEC system and mention the limitations | CO3 | L2 | 5M |
|  | b) | Describe the closed cycle OTEC system, with its advantages over open cycle system. | CO3 | L3 | 5M |
|  |  | **(OR)** |  |  |  |
| 7. | a) | Discuss the source of tidal energy and the minimum tidal range required for the working of tidal plant. | CO3 | L3 | 5M |
|  | b) | Explain the origin of Biomass Energy and its global potential. | CO3 | L2 | 5M |
|  |  | **Unit -IV** |  |  |  |
| 8. | a) | Describe the working of MHD power generation systems. | CO4 | L3 | 4M |
|  | b) | Explain the principle of operation of a fuel cell | CO4 | L2 | 6M |
|  |  | **(OR)** |  |  |  |
| 9. | a) | Write merits & demerits of different types of fuel cell | CO4 | L2 | 5M |
|  | b) | Discuss the construction of Floating drum type of bio-gas Reactors. | CO4 | L3 | 5M |

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