

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year II Semester Supplementary Examinations May/June-2024**  
**NON- CONVENTIONAL ENERGY RESOURCES**

(Mechanical Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 1 | a | What are the types of solar radiation measuring instruments? | CO1 | L1 | 2M |
|   | b | Write the applications of solar energy.                      | CO2 | L1 | 2M |
|   | c | Mention the merits and demerits of wind energy.              | CO3 | L1 | 2M |
|   | d | What are the different forms of bio-energy?                  | CO4 | L1 | 2M |
|   | e | What is hydrogen fuel?                                       | CO5 | L1 | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 2 | a | With suitable illustration explain the working of sunshine recorder.    | CO1 | L1 | 5M |
|   | b | With suitable illustration describe the working of hot wire anemometer. | CO1 | L2 | 5M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 3 | a | Write a short note on the use of wind sock in aviation industry. | CO1 | L1 | 5M |
|   | b | With suitable illustration explain eppley pyranometer.           | CO1 | L2 | 5M |

**UNIT-II**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 4 | a | Explain the working principle of concentrating collector.               | CO2 | L1 | 5M |
|   | b | Write the working principle of flat plate collector with a neat sketch. | CO2 | L2 | 5M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 5 | a | Explain the working principle of solar PV cells.                | CO2 | L1 | 5M |
|   | b | Explain the construction and uses of evacuated tube collectors. | CO2 | L2 | 5M |

**UNIT-III**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 6 | a | How the electricity will be generated from wind turbine generator. | CO3 | L1 | 5M |
|   | b | With suitable illustration explain the working of HAWT.            | CO3 | L2 | 5M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 7 | a | With suitable illustration explain the working of VAWT.   | CO3 | L1 | 5M |
|   | b | Explain briefly the functioning of Darrieus wind turbine. | CO3 | L2 | 5M |

**UNIT-IV**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 8 | a | What are the factors affecting the generation of bio gas.              | CO4 | L1 | 5M |
|   | b | Explain the function of Deenbandhu biogas digester with a neat sketch. |     |    | 5M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 9 | a | Explicate various steps involve in the production of Ethanol. | CO4 | L1 | 5M |
|   | b | With a neat sketch explain biomass gasification.              | CO4 | L2 | 5M |

**UNIT-V**

- |    |   |  |     |    |    |
|----|---|--|-----|----|----|
| 10 | a | Explain the working of fuel cell and their applications. | CO5 | L1 | 5M |
|    | b | Describe various methods of hydrogen storage.            | CO5 | L2 | 5M |

**OR**

- |    |   |   |     |    |    |
|----|---|---|-----|----|----|
| 11 | a | Explain in detail the wave energy conversion by floats. | CO5 | L1 | 5M |
|    | b | Explain binary cycle power plant with neat diagram.     | CO5 | L2 | 5M |

\*\*\* END \*\*\*

