

Code No.: ME741PE

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**CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS**

**IV-B.TECH-I-Semester End Examinations (Regular) - November- 2023
RENEWABLE ENERGY SOURCES
(MECH)**

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) What are the different renewable energy sources available in India? [2M]
- b) Write about the need of renewable energy. [2M]
- c) List out the applications of solar energy. [2M]
- d) Write the value of solar constant. [2M]
- e) List out the characteristics of wind turbines. [2M]
- f) Explain about Betz limit in wind turbines. [2M]
- g) What are the biomass resources? [2M]
- h) Explain the production of biodiesel. [2M]
- i) Define Wave energy. [2M]
- j) List out the types of Geothermal power plants. [2M]

PART-B

(50 Marks)

2. Differentiate renewable and non renewable energy sources and state their relative merits and demerits. [10M]
- OR**
3. Describe the CO₂ reduction potential of renewable energy. [10M]
 4. Explain beam, diffused and global radiation. [10M]
- OR**
5. Explain the working of solar pond with the help of schematic diagram. [10M]
 6. Discuss the wind energy potential and potential measurement in India. [10M]
- OR**
7. Compare horizontal and vertical axis wind turbines. [10M]
 8. Classify biogas plants and discuss the parameters that affect the performance of biogas digester. [10M]
- OR**
9. Describe the biomass energy programme in India. [10M]
 10. Show that wave power is directly proportional to the square of amplitude and inversely proportion to the period of wave. [10M]
- OR**
11. Discuss the working principle of Ocean Thermal Energy Conversion (OTEC) with neat sketch. [10M]
