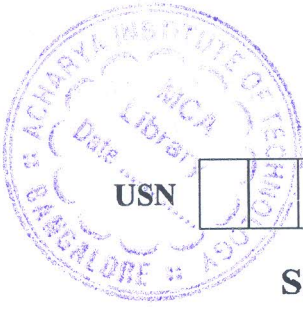


# CBCS SCHEME

21EE652



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## Sixth Semester B.E. Degree Examination, June/July 2024 Renewable Energy Resources

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Briefly discuss the causes of energy scarcity and possible solution to energy scarcity. (06 Marks)
- b. Classify the various types of energy resources and explain briefly. (08 Marks)
- c. Discuss the worldwide renewable energy availability briefly. (06 Marks)

OR

- 2 a. With neat sketch, explain the layers of Sun. (06 Marks)
- b. Define the following :  
i) Hour Angle    ii) Declination angle    iii) Latitude angle    iv) Surface Azimuth angle (08 Marks)
- c. Write brief notes on applications of solar thermal energy. (06 Marks)

### Module-2

- 3 a. With neat sketch, explain flat plate solar collector. (07 Marks)
- b. Write short notes on Solar pond. (06 Marks)
- c. Write brief notes on Stirling Engine system. (07 Marks)

OR

- 4 a. Explain the components of a solar cell. (06 Marks)
- b. Draw and brief out the V-I characteristics of solar cell. (06 Marks)
- c. Write detailed notes on photovoltaic panels with necessary diagrams. (08 Marks)

### Module-3

- 5 a. List the benefits of hydrogen energy. (04 Marks)
- b. Explain the hydrogen production techniques in detail. (08 Marks)
- c. Briefly explain the problems associated with hydrogen energy. List the advantages and disadvantages of hydrogen energy. (08 Marks)

OR

- 6 a. Explain the parameters to be considered while choosing a site for wind mills. (05 Marks)
- b. Explain in detail, the geothermal based power generation and its associated problems. (08 Marks)
- c. Elaborate the waste recovery management scheme briefly. (07 Marks)

### Module-4

- 7 a. Define gasification. Explain the various types of gasifier with neat sketches. (10 Marks)
- b. Write short notes on characteristics of biomass feed. (05 Marks)
- c. Briefly bring out the applications of biomass gasifier. (05 Marks)

OR

- 8 a. Write brief notes on biogas and its composition. (06 Marks)  
b. Explain in detail, the process of anaerobic digestion with neat sketch. (10 Marks)  
c. List the benefits of biogas. (04 Marks)

**Module-5**

- 9 a. With neat sketches, explain the devices for harnessing wave energy. (08 Marks)  
b. Write short notes on power associated with sea waves. (06 Marks)  
c. Enumerate the advantages and disadvantages of wave power. (06 Marks)

OR

- 10 a. Discuss the principle of Ocean Thermal Energy Conversion (OTEC). (06 Marks)  
b. Explain Rankin cycle and its working. (08 Marks)  
c. Bring out the advantages, disadvantages and applications of OTEC. (06 Marks)

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