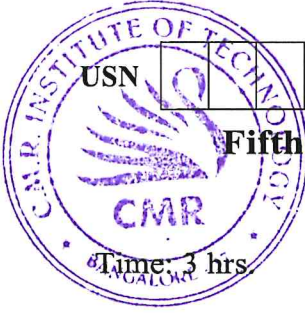


# CBCS SCHEME

17EE563



USN

## Fifth Semester B.E. Degree Examination, July/August 2022 Renewable Energy Resources

Max. Marks: 100

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

### Module-1

- 1 a. Discuss about causes of Energy Scarcity. (06 Marks)
- b. Explain the advantages and limitations of Renewable Energy Sources. (06 Marks)
- c. Discuss different ways of classifying Energy Sources. Mention atleast two Energy Resources in each category. (08 Marks)

OR

- 2 a. Explain the factors affecting Energy Resource development. (06 Marks)
- b. Explain the following terms : i) Latitude angle ii) Incident angle iii) Zenith angle. (06 Marks)
- c. Determine the local solar time and declination at a location latitude  $23^{\circ} 15' N$  , Longitude  $77^{\circ} 30' E$  at 12, 30 IST on June 19. Equation of time correction is given from standard table or chat is  $-1' 01''$ . (08 Marks)

### Module-2

- 3 a. Explain the disadvantages of concentrating collectors over flat plate collectors. (06 Marks)
- b. With a neat diagram, explain the working principle of Solar cooker. (06 Marks)
- c. Explain the three different zones of solar pond with a neat diagram. Also explain how thermal energy is extracted. (08 Marks)

OR

- 4 a. Discuss about different Solar cell materials. (06 Marks)
- b. Explain I – V characteristics of Solar cells. (06 Marks)
- c. Discuss about efficiency of Solar cells and fill factor. (08 Marks)

### Module-3

- 5 a. Explain the benefits of Hydrogen Energy. (06 Marks)
- b. Explain the different methods of Hydrogen Energy Storage. (06 Marks)
- c. Explain Electrolytic production technologies used to produce hydrogen. (08 Marks)

OR

- 6 a. Discuss about factors or guidelines for Wind turbine site selection. (06 Marks)
- b. Explain the disadvantages of Geo thermal power plant. (06 Marks)
- c. With a neat diagram, explain Single flash Geo – thermal Electric power plant. (08 Marks)

### Module-4

- 7 a. Discuss the different ways of obtaining Energy from biomass. (06 Marks)
- b. Explain briefly Anaerobic digestion. (06 Marks)
- c. Explain about the working of Cross – draft type of gasifier, with neat diagram. (08 Marks)

OR

- 8 a. Discuss the advantages and disadvantages of Tidal Power Plants. (06 Marks)  
b. Explain the factors affecting the selection of Biogas plant. (06 Marks)  
c. With a neat diagram, explain Fixed – dome type of Bio – gas plant. (08 Marks)

**Module-5**

- 9 a. Discuss about devices used for Harnessing Sea Wave Energy. (06 Marks)  
b. Explain principle of Ocean Thermal Energy Conversion and different types of Ocean Thermal Energy Conversion Plants. (06 Marks)  
c. Explain the advantages and disadvantages of OTEC plants. (08 Marks)

OR

- 10 a. With a neat diagram, explain OTEC Rankine cycle. (06 Marks)  
b. Explain the working principle of Open cycle OTEC, with a neat diagram. (06 Marks)  
c. Explain the advantages and disadvantages of Sea Wave Energy. (08 Marks)

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