



# CBCS SCHEME

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17EE563

## Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 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. Explain causes of energy scarcity. (06 Marks)
- b. Classify the energy resources. What are the factors affecting energy resource development. (08 Marks)
- c. Discuss Indian renewable energy availability. (06 Marks)

OR

- 2 a. With the help of a diagram. Define :
  - i) Hour angle
  - ii) Latitude angle
  - iii) Solar Azimuth angle
  - iv) Declination angle. (08 Marks)
- b. Explain basic Rankine cycle of electricity production. (04 Marks)
- c. Briefly explain any six solar thermal energy applications. (08 Marks)

### Module-2

- 3 a. With a neat sketch discuss the operation of solar flat plate air and liquid collectors. (08 Marks)
- b. Explain the advantages of solar pond? Discuss the operation of a solar pond with neat diagram. (06 Marks)
- c. Discuss solar space cooling and solar cookers working and uses. (06 Marks)

OR

- 4 a. Explain about solar cell materials. (06 Marks)
- b. Discuss the various applications of solar cell systems. (06 Marks)
- c. Explain I-V characteristics of a solar cell. Discuss the efficiency of a solar cell. (08 Marks)

### Module-3

- 5 a. Discuss the advantages of hydrogen energy. (06 Marks)
- b. Explain different hydrogen production technologies. (06 Marks)
- c. Discuss the considerations and guidelines for wind turbine site selection. Also explain worldwide wind energy scenario. (08 Marks)

OR

- 6 a. With a neat diagram, explain any two types of Geothermal Based Electric power generations. (08 Marks)
- b. With a block diagram briefly explain waste recovery management scheme. (08 Marks)
- c. Discuss the recycling of plastics. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-4**

- 7 a. Explain how biomass production takes place. (06 Marks)  
b. With a neat sketch, explain updraft and down draft gasifiers. (08 Marks)  
c. Explain advantages and uses of Biogas. (06 Marks)

**OR**

- 8 a. Explain the single basin and two basin systems of tidal power harnessing. (08 Marks)  
b. With a neat diagram, explain floating dome type biogas plant. (08 Marks)  
c. Discuss the tidal Power Generation in India. (04 Marks)

**Module-5**

- 9 a. Explain the various devices for Harnessing wave energy. (06 Marks)  
b. What are the advantages and disadvantages of wave power? (06 Marks)  
c. Explain open cycle and closed cycle OTEC techniques. (08 Marks)

**OR**

- 10 a. With a neat diagram, explain oscillating water column device for harnessing sea wave energy. (08 Marks)  
b. Explain basic OTEC hybrid cycle. (06 Marks)  
c. What are the advantages disadvantages and benefits of OTEC? (06 Marks)

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