



CBCS SCHEME

18EE653

Sixth Semester B.E. Degree Examination, Jan./Feb. 2023 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 in modern world. (07 Marks)
- b. Write a note on energy resources and their classification. (07 Marks)
- c. Draw a neat sketch of structure of the sun and explain characteristics of different layers. (06 Marks)

OR

- 2 a. Define renewable energy resources, and differentiate them from conventional sources of energy. (07 Marks)
- b. Discuss advantages and disadvantages of conventional energy resources. (07 Marks)
- c. Define: (i) Hour angle (ii) Zenith angle (iii) Azimuth angle (06 Marks)

Module-2

- 3 a. Explain working of Stirling Heat Engine, with the help of a neat sketch. (07 Marks)
- b. Write a note on application of solar thermal energy for crop drying. (07 Marks)
- c. Discuss I-V characteristics of a photovoltaic cell. (06 Marks)

OR

- 4 a. Classify the different solar thermal collectors. Explain in short the working of parabolic solar thermal collector. (07 Marks)
- b. What are the merits and demerits of photoelectric energy generation? How P.V. electricity can be integrated into the power grid? Explain in brief. (07 Marks)
- c. Give a brief account on solar space heating and differentiate passive and active space heating. (06 Marks)

Module-3

- 5 a. Discuss Hydrogen as an alternative fuel. Explain its utilization as a transportation fuel. (07 Marks)
- b. What is geothermal system? Explain its utility as an energy resource. (07 Marks)
- c. Classify municipal waste on the basis of its composition. (06 Marks)

OR

- 6 a. List and briefly explain different hydrogen production technologies. (07 Marks)
- b. Explain construction and working of a horizontal axis wind turbine electricity generator, using a neat sketch. (07 Marks)
- c. Differentiate pyrolysis and gasification, on basis of use of oxygen, operating temperature and utility. (06 Marks)

Module-4

- 7 a. Explain working fluidized bed gasifier with the help of a neat sketch. (07 Marks)
- b. What is anaerobic digestion? Explain in brief. (07 Marks)
- c. Explain utility tidal waves as a source of energy. (06 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.

OR

- 8 a. Explain working of a fixed dome type biogas plant, using a neat sketch of the same. (07 Marks)
- b. Classify gassifiers on the basis of direction of air/oxygen flow in the equipment. Explain in brief the working of cross draft gassifier. (07 Marks)
- c. Discuss working of a tidal power plant with the help of a neat sketch. (06 Marks)

Module-5

- 9 a. What is sea wave energy? Explain in brief the challenges in harnessing the sea wave energy. (07 Marks)
- b. What are the different devices available for harnessing the sea wave energy? Explain in brief. (07 Marks)
- c. Explain the principles of ocean thermal energy conversion. (06 Marks)

OR

- 10 a. Explain working of Salter's duck, with the help of a neat sketch. (07 Marks)
- b. Discuss merits and demerits of sea wave power. (07 Marks)
- c. Discuss different applications of Ocean Thermal Energy Conversion (OTEC), including electricity generation. (06 Marks)
