

Sixth Semester B.E. Degree Examination, July/August 2022 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. Discuss causes of energy scarcity and solution to energy scarcity. (06 Marks)
b. Briefly explain energy resources and its classification. (08 Marks)
c. Explain worldwide renewable energy availability. (06 Marks)

OR

- 2 a. With necessary diagram, explain layers of the sun. (08 Marks)
b. Define the following terms:
i) Zenith angle
ii) Declination angle
iii) Altitude angle
iv) Incident angle. (08 Marks)
c. With a neat diagram, explain Rankine cycle of electricity production. (04 Marks)

Module-2

- 3 a. With a neat sketch, explain important parts of flat plate air collectors and concentrating collectors. (08 Marks)
b. With the help of diagram, explain solar cooker and write advantages and disadvantages of it. (08 Marks)
c. Discuss the various material aspects of solar collector. (04 Marks)

OR

- 4 a. Explain any six applications of solar cells. (06 Marks)
b. Draw and explain I-V characteristics of solar cell and the factors limiting the efficiency of the cell. (08 Marks)
c. Explain solar cell material. (06 Marks)

Module-3

- 5 a. State and explain methods of hydrogen production technologies. (08 Marks)
b. Discuss the applications, advantages and disadvantages of hydrogen energy. (06 Marks)
c. Describe the main consideration in selecting a site for wind generators. (06 Marks)

OR

- 6 a. With a neat sketch, explain dry steam based geothermal power plant. (06 Marks)
b. With necessary diagram, explain waste recovery management scheme. (08 Marks)
c. Write the advantages and disadvantages of waste recycling. (06 Marks)

Module-4

- 7 a. With the help of diagram, explain gasifier and their classifications. (06 Marks)
b. Explain chemistry of reaction process in gasification. (08 Marks)
c. Explain biological and chemical stages of anaerobic digestion. (06 Marks)

OR

- 8 a. With a neat sketch, explain fixed dome type biogas plant. (08 Marks)
b. With the help of diagram, explain two basin system in tidal power harnessing. (06 Marks)
c. Discuss problems faced in exploiting tidal energy. (06 Marks)

Module-5

- 9 a. Discuss motion in the sea waves. (04 Marks)
b. Explain various devices for harnessing wave energy. (08 Marks)
c. Distinguish between land-based OTEC power plants and floating OTEC power plant. (08 Marks)

OR

- 10 a. Write the advantages and disadvantages of wave power. (06 Marks)
b. With a neat sketch, explain closed cycle and hybrid cycle in OTEC cycle. (08 Marks)
c. Discuss application of OTEC in addition to produce electricity. (06 Marks)
