CBCS SCHEME

USN | | | | | | | | | | |

21EE652

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
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 explain energy resources and its classification. **(10 Marks)**

b. Define the following terms:
i) Solar azimuth angle
ii) Zenith angle
iii) Declination angle
iv) Incident angle
v) Altitude angle **(10 Marks)**

OR

2 a. Discuss causes of energy scarcity and solution to energy scarcity. **(10 Marks)**

b. Discuss Indian renewable energy availability. **(05 Marks)**

c. Explain solar radiation at earth surface with neat diagram. **(05 Marks)**

Module-2

3 a. Explain the advantages of solar pond. Discuss the operation of solar pond with neat diagram. **(10 Marks)**

b. With the help of diagram, explain solar cooker and mention advantages and disadvantages of it. **(10 Marks)**

OR

4 a. Draw and explain I – V characteristics of solar cell and the factors limiting two efficiency of the cell. **(10 Marks)**

b. Explain the various applications of solar cell systems. **(05 Marks)**

c. Explain solar cell material. **(05 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 necessary diagram, explain waste recovery management scheme. **(10 Marks)**

b. Write the advantages and disadvantages of waste recycling. **(06 Marks)**

c. Discuss the recycling of plastics. **(04Marks)**

Module-4

7 a. With a neat sketch, explain updraft and down draft gasifiers. **(10 Marks)**

b. Explain the advantages and uses of biogas. **(10 Marks)**

OR

8 a. Explain the single basin and two basin systems of tidal power harnessing. (10 Marks)
b. With a neat diagram floating dome type biogas plant. (10 Marks)

Module-5

9 a. Explain the various devices for harnessing wave energy. (08 Marks)
b. Explain open cycle and closed cycle OTEC techniques. (12 Marks)

OR

10 a. Write the advantages and disadvantages of wave power. (08 Marks)
b. Discuss application of OTEC in addition to produce electricity. (08 Marks)
c. Distinguish between land based OTEC and floating OTEC power plant. (04 Marks)

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