CBCS SCHEME

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18EE653

Sixth Semester B.E. 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 factor affecting energy resource development. **(08 Marks)**

b. Write short notes on layer of sun. **(06 Marks)**

c. Discuss world wide renewable energy availability. **(06 Marks)**

OR

2 a. Define:
i) Hour angle
ii) Latitude angle
iii) Solar azimuth angle
iv) Declination angle. **(08 Marks)**

b. Briefly explain any six solar thermal energy application. **(06 Marks)**

c. Distinguish between beam radiation and diffuse radiation. **(06 Marks)**

Module-2

3 a. Draw and explain electrical equivalent circuit model and current voltage characteristic of solar cells. **(08 Marks)**

b. What are the main elements of PV system? **(04 Marks)**

c. What are solar collectors? Give classification and compare them based on construction and area of application. **(08 Marks)**

OR

4 a. Explain working of solar cooker. **(06 Marks)**

b. Explain about solar cell material. **(06 Marks)**

c. With neat sketch, explain operation of solar flat plate air and liquid collectors. **(08 Marks)**

Module-3

5 a. Discuss the consideration and guidelines for wind turbine site selection. Also explain world wide wind scenario energy. **(08 Marks)**

b. With block diagram briefly explain waste explain waste recovery management scheme. **(08 Marks)**

c. Mention problems associated with the development and application of hydrogen energy. **(04 Marks)**

OR

6 a. Explain the binary cycle geothermal power plant. **(07 Marks)**

b. Explain electrolytic production technologies used to produce hydrogen. **(07 Marks)**

c. Write the difference between the geothermal power plant and thermal power plant. **(06 Marks)**

Module-4

7 a. With a neat sketch, explain updraft and down draft gasifier. **(08 Marks)**
b. Discuss about the problems faced in exploiting tidal energy. **(06 Marks)**
c. Brief on sources and types of wastes. **(06 Marks)**

OR

8 a. Explain with a neat diagram floating dome type biogasplant. **(08 Marks)**
b. Explain how biomass production takes place. **(06 Marks)**
c. Explain various stages of cooling and cleaning of gasifiers gas. **(06 Marks)**

Module-5

9 a. Explain open cycle ocean thermal energy conventional technique. **(08 Marks)**
b. Discuss limitation of ocean wave energy. **(06 Marks)**
c. List advantages and disadvantages of sea wave energy. **(06 Marks)**

OR

10 a. Explain working of salt duck system for harnessing sea wave energy. **(08 Marks)**
b. What is the basic principle of OTEC? **(06 Marks)**
c. Explain power associated with sea waves. **(06 Marks)**

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