

CBCS SCHEME

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15EE563

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Renewable Energy Sources

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss four causes of energy scarcity. (04 Marks)
- b. Find the solar elevation angle (α) at 2h after local solar noon on 1st June 2012 for a city, which is located at 26.75°N latitude. (06 Marks)
- c. With the help of diagram, define :
i) Solar altitude angle ii) Latitude angle iii) Surface Azimuth angle. (06 Marks)

OR

- 2 a. Define i) Declination angle and ii) Hour Angle. (04 Marks)
- b. Write note on classification of energy resources. (06 Marks)
- c. Briefly explain any six solar thermal energy applications. (06 Marks)

Module-2

- 3 a. With neat sketch, discuss important parts of flat plate solar collector. (04 Marks)
- b. With the help of diagram, explain Brayton cycle solar electric generation. (06 Marks)
- c. With neat diagram, explain solar pond and write any one advantage of it. (06 Marks)

OR

- 4 a. What are the factors which limit the efficiency of the solar cell? (04 Marks)
- b. Briefly explain any six applications of solar cells. (06 Marks)
- c. With the help of neat diagram, explain key elements of a Photo – Voltaic cell. (06 Marks)

Module-3

- 5 a. Discuss any four applications of hydrogen energy. (04 Marks)
- b. Explain the thermochemical hydrogen production technology. (06 Marks)
- c. Describe the main considerations in selecting site for wind generators. (06 Marks)

OR

- 6 a. Define and explain recycling of wastes and its benefits. (04 Marks)
- b. Derive the expression for power developed due to wind. (06 Marks)
- c. Explain with diagram, dry steam geothermal power plant. (06 Marks)

Module-4

- 7 a. Explain with sketch, two basin system of tidal power harnessing. (04 Marks)
- b. Draw sketch of down – draft gasifier and explain its working. Write its applications. (06 Marks)
- c. Describe the construction and working of floating dome type bio – gas plant and its materials aspects. (06 Marks)

OR

- 8 a. Briefly explain four problems faced in exploiting tidal energy. (04 Marks)
b. Describe the construction and working of fixed dome type biogas plant and its material aspects. (06 Marks)
c. With diagram, explain updraft gasifier and write its applications area. (06 Marks)

Module-5

- 9 a. Write advantages of sea wave power. (04 Marks)
b. Explain how the ocean temperature differences can be used to generate electrical power using open cycle system. (06 Marks)
c. Describe with diagram, principle of oscillating water column ocean wave machine. (06 Marks)

OR

- 10 a. Briefly explain types of devices for harnessing wave energy. (04 Marks)
b. Describe the 'Closed – Cycle' OTEC system, with the help of diagram. (06 Marks)
c. State the merits and demerits of OTEC plants. (06 Marks)
