

# CBCS Scheme

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15EE563

## Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Renewable Energy Sources

Time: 3 hrs.

Max. Marks: 80

**Note:** Answer FIVE full questions, choosing one full question from each module.

### Module-1

- 1 a. Define Energy and Energy resources. Discuss different ways of their classification with examples in each category. (06 Marks)  
b. Write a short note on layers of the sun. (05 Marks)  
c. Calculate Zenith angle of the sun at Lucknow ( $26.75^{\circ}\text{N}$ ) at 9:30am on February 16, 2012. (05 Marks)

OR

- 2 a. Discuss about causes of Energy scarcity. (05 Marks)  
b. List Solar Thermal Energy Applications. (05 Marks)  
c. Define : i) Hour angle ii) Latitude angle iii) Day length equation. (06 Marks)

### Module-2

- 3 a. With a neat schematic diagram, explain working of a Stirling Engine. (06 Marks)  
b. Write short note on : Solar Air heating. (05 Marks)  
c. Discuss about Efficiency of Solar cells and fill factor. (05 Marks)

OR

- 4 a. Discuss about different solar cell materials. (05 Marks)  
b. List the applications of solar cell systems. (05 Marks)  
c. With a neat schematic diagram, explain working of a solar water heating system. (06 Marks)

### Module-3

- 5 a. Explain Electrolytic production technologies used to produce hydrogen. (06 Marks)  
b. Discuss about the factors or guidelines for wind turbine site selection. (05 Marks)  
c. With a neat diagram, explain single – flash geo – thermal electric power plant. (05 Marks)

OR

- 6 a. List the advantages and disadvantages of Hydrogen energy. (05 Marks)  
b. Discuss about wind characteristics. (05 Marks)  
c. With a neat diagram, explain Binary cycle based geothermal electric power plant. Also list the disadvantages of geo – thermal power plants. (06 Marks)

### Module-4

- 7 a. Using a schematic diagram, explain the co-operating Two – basin systems. (06 Marks)  
b. Explain briefly Anaerobic digestion. (05 Marks)  
c. Brief about the working of Cross – draft type of gasifiers. (05 Marks)

OR

- 8 a. Discuss about the problems faced in exploiting tidal energy. (05 Marks)  
b. Brief on sources and types of wastes. (05 Marks)  
c. With a neat schematic diagram, explain fixed – dome type of Bio – gas plant. (06 Marks)

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Module-5

- 9 a. With a neat diagram, explain OTEC Rankine cycle. (06 Marks)  
b. Discuss about devices used for harnessing sea wave energy. (05 Marks)  
c. List the benefits as a measure of the value of OTEC. (05 Marks)

OR

- 10 a. List the applications of OTEC. (05 Marks)  
b. Brief on advantages and disadvantages of sea wave power. (05 Marks)  
c. Explain the working principle of closed cycle OTEC, with a neat diagram. (06 Marks)

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