

# CBCS SCHEME

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18EE731

## Seventh Semester B.E. Degree Examination, Feb./Mar. 2022 Solar and Wind Energy

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain about the importance and salient features of Non – Conventional Energy Sources. (10 Marks)
- b. How the Energy Audit is classified? Explain each one clearly. (10 Marks)

OR

- 2 a. What are the necessity of Energy Storage? Also explain about energy storage device specifications. (10 Marks)
- b. How the Solar radiations are depleted? (05 Marks)
- c. With neat diagram, explain about Extraterrestrial and Terrestrial Radiations. (05 Marks)

### Module-2

- 3 a. What are the different instruments used to measure the solar radiation data? Explain each with neat diagram. (10 Marks)
- b. With neat diagram, explain the following :  
i) Angle of Latitude ( $\phi$ )    ii) Surface Azimuth angle ( $\gamma$ )    iii) Zenith Angle ( $\theta_z$ )  
iv) Inclination angle ( $\alpha$ ). (10 Marks)

OR

- 4 a. With neat diagrams, explain the working of : i) Solar water heater    ii) Solar cookers. (10 Marks)
- b. Explain with neat sketches, about Solar Passive Space heating and Cooling systems. (10 Marks)

### Module-3

- 5 a. What are the important points to be considered for maximizing the Solar PV output? (05 Marks)
- b. How you can construct Solar cell, Module and Array? Explain with neat diagram. (10 Marks)
- c. Briefly explain about Maximum Power Point Tracker. (05 Marks)

OR

- 6 a. With neat block diagrams, explain about Solar PV systems and explain its applications. (10 Marks)
- b. What is Balance of System Components? Briefly explain about individual components. (10 Marks)

### Module-4

- 7 a. Write a brief note on the following :  
i) Wind energy site selection considerations    ii) The nature of the wind. (10 Marks)
- b. What are the factors influence the cost of wind energy generation? (05 Marks)
- c. Explain about Economics of wind energy. (05 Marks)

OR

- 8 a. Explain the following : i) Wind Energy Conversion      ii) History of Wind Energy. (10 Marks)  
b. What are the Environmental benefits and problems of Wind Energy? (10 Marks)

**Module-5**

- 9 a. What are the different Wind Energy Conversion System? Explain neatly. (10 Marks)  
b. Explain the following :  
i) Applications of Wind Energy      ii) Environmental Aspects of Wind Energy. (10 Marks)

OR

- 10 a. What are the advantages and disadvantages of Wind Energy Conversion System? (10 Marks)  
b. Explain the following :  
i) Types of Wind Machines      ii) Performance of Wind Machines. (10 Marks)

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