

# CBCS SCHEME

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21AU651

## Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Renewable 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 the applications of solar direct thermal energy. (10 Marks)  
b. Explain the principle of solar heating and cooling system with a labelled diagram. (10 Marks)

OR

- 2 a. Discuss the various measurements of solar radiation. (10 Marks)  
b. Explain the various fundamentals of solar photo voltaic conversions. (10 Marks)

### Module-2

- 3 a. Discuss the various factors influencing wind. (07 Marks)  
b. Discuss the variation of wind speed with respect to height and time. (07 Marks)  
c. Explain the components of wind energy conversion systems in brief. (06 Marks)

OR

- 4 a. Briefly discuss the differences between horizontal axis and vertical axis wind turbine. (10 Marks)  
b. Discuss the variable speed generators with suitable figure. (10 Marks)

### Module-3

- 5 a. Discuss the various merits and demerits of ocean thermal electric conversion. (10 Marks)  
b. Explain the various methods of utilization of tidal energy. (10 Marks)

OR

- 6 a. Discuss the different methods of ocean thermal electric power generation. (10 Marks)  
b. Explain the working principle of ocean thermal electric conversion with a suitable figure. (10 Marks)

### Module-4

- 7 a. With a suitable sketch, discuss the general layout of hydroelectric power plant. (10 Marks)  
b. With a suitable labelled diagram of Francis turbine. (10 Marks)

OR

- 8 a. Describe the essential elements of hydraulic electric power plant. (10 Marks)  
b. With a labelled diagram, discuss the working principle of pelton turbine. (10 Marks)

### Module-5

- 9 a. In a brief, discuss the nature of geothermal fields. (10 Marks)  
b. Explain the concept of high pressure and low pressure hydrothermal power plant. (10 Marks)

OR

- 10 a. With a labelled diagram, explain the production of biomass. (10 Marks)  
b. Explain the classification of biomass in brief. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.