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Question Paper Code : 10589

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Seventh Semester

Electrical and Electronics Engineering

EE 8703 – RENEWABLE ENERGY SYSTEMS

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. List out any four renewable energy sources.
2. Mention the limitations of renewable energy sources.
3. Give the equation for power in the wind energy.
4. Classify the wind energy conversion systems.
5. Name the devices used for global solar radiation, beam solar radiation and diffused solar radiation.
6. How to estimate the quality of a solar PV cell?
7. Classify hydroelectric turbines.
8. Draw the scheme of small hydroelectric power plant.
9. What are tides? How are they created in nature?
10. Name the hydrogen production methods.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Discuss about the consequences of coal, oil and nuclear fuel usage.

Or

- (b) Describe about the present conventional and renewable energy usage with respect to Indian scenario.

12. (a) Explain about the components and their functions in a wind energy conversion system.

Or

- (b) Discuss about the issues when the wind energy systems are integrated with grid.

13. (a) Describe the working of central receiver solar thermal power system with its schematic diagram.

Or

- (b) Discuss the necessity of incorporating MPPT in solar PV systems. Describe the perturb and observe (P&O) MPPT method used in solar PV system.

14. (a) Explain the biomass cogeneration power plants with its schematic diagram. Discuss about the benefits of it.

Or

- (b) Describe the working of flash steam based geothermal power plants with its schematic diagram.

15. (a) With the help of neat sketch, describe the arrangements for OTEC power system. Explain about its principle and working.

Or

- (b) Explain the working of phosphoric acid fuel cell and molten oxide fuel cell.

PART C — (1 × 15 = 15 marks)

16. (a) Explain about the construction of solar cell, arrays and modules. Discuss about the I-V characteristics of solar PV and their variation with respect to irradiation and temperature.

Or

- (b) Discuss about the energy storage technologies that are currently available. Compare them according to technical feasibility, adaptability, applications, technical challenges.