B 263 NRR

B.Sc. DEGREE EXAMINATION, JULY 2023.

Sixth Semester

Physics

RENEWABLE ENERGY AND ENERGY HARVESTING

(From 2017 – 18 onwards)

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What are the advantages of wind energy?

2. How does a tide originate?

3. Why biomass is considered to be a renewable energy source?

4. Differentiate a Non Convective Solar Pond from a Shallow Solar Pond.

5. What is solar module?

6. What is meant by Stalling in wind energy harvesting?

7. State Lambert's law.

8. What are the basic applications of geothermal energy?

9. Name the components of a solar cell.

10. Why Silicon is preferred for the construction of solar cells?

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions, choosing either (a) or (b).

11. (a) Write a note on fossil fuels along with their limitations.

Or

(b) Explain the origin of hydroelectricity and its advantages.

12. (a) Write a note on geothermal energy.

Or

(b) Brief the applications of solar ponds.

13. (a) Describe the working of a solar water heater.

Or

(b) Give an account on power electronic interfaces in wind turbines.

14. (a) Write a note on ocean energy potential against solar energy.

Or

(b) Discuss the environmental impact of hydropower sources.

15. (a) Write a note on linear generators to harvest electromagnetic energy.

Or

(b) Brief the importance of sustainability of renewable energy sources.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Give an account on the biogas generation along with its limitations.

17. Write a note on the construction and working of a flat plate collector with a neat diagram.

18. Describe different PV models and their equivalent circuits.

19. Give an account on wave energy devices.

20. Write a note on the mathematical models of devices to harvest electromagnetic energy.

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