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Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025

Non Conventional Energy Sources

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Enumerate the importance of non-conventional energy sources with their advantages and disadvantages. (08 Marks)
- b. Explain the working of PV cells with advantages and disadvantages. (08 Marks)
- c. Explain the three modes of thermal energy. (04 Marks)

OR

- 2 a. Briefly classify the energy resources. (08 Marks)
- b. Briefly explain i) Solar constant ii) Pyrometer. (08 Marks)
- c. Enumerate the importance of need for alternative energy source. (04 Marks)

Module-2

- 3 a. Define the following:
 - i) Surface azimuth angle
 - ii) Solar incident angle
 - iii) Hour angle
 - iv) Meridian. (08 Marks)
- b. Explain the classification of concentrate collector. (04 Marks)
- c. Explain the flat plate collector explain the parameters affects FPC. (08 Marks)

OR

- 4 a. Enumerate the important characteristic of a thermal storage system. (08 Marks)
- b. Briefly explain the important solar energy storage system. (08 Marks)
- c. Write a note on solar cooking. (04 Marks)

Module-3

- 5 a. Explain briefly the concentrating collector and non concentrating collector with example. (08 Marks)
- b. With neat sketch explain the working of photovoltaic cell. List out the advantages and disadvantage of photo voltaic cell. (08 Marks)
- c. Write a note on performance of solar collector. (04 Marks)

OR

- 6 a. Write a short notes on:
 - i) Basic energy balance equation
 - ii) Stagnation temperature (08 Marks)
- b. Explain the effect of various parameters on the collector performance. (08 Marks)
- c. List the important photovoltaic application. (04 Marks)

Module-4

- 7 a. Explain the various types of wind turbines. (08 Marks)
b. With neat sketch, explain the main components of tidal power plant. (08 Marks)
c. Write a note on OTEC. (04 Marks)

OR

- 8 a. With neat sketch, explain various types of turbine used in tidal energy. (08 Marks)
b. How wind energy is generated? Explain the availability of wind energy in India. (08 Marks)
c. Briefly explain the limitation of tidal energy. (04 Marks)

Module-5

- 9 a. Briefly explain the advantages and disadvantages of biomass energy (08 Marks)
b. Explain the factor affecting bio gas generation. (08 Marks)
c. What are the sources and properties of hydrogen as a fuel? (04 Marks)

OR

- 10 a. With neat sketch, explain the working of Indian digester with chemical formula. Also mention the advantages. (08 Marks)
b. Explain the working principle of geothermal energy. Enumerate the problem associated with geothermal energy. (08 Marks)
c. Explain the production of hydrogen by electrolysis of water. (04 Marks)

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