

USN

18ME651



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)

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- 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)
