

## 2.3 40453 NON-CONVENTIONAL ENERGY SOURCES

### UNIT-1 SOURCES OF ENERGY:

- 1.1 Different sources
- 1.2 Application of sources with reference to Rajasthan

### UNIT-2 SOLAR ENERGY:

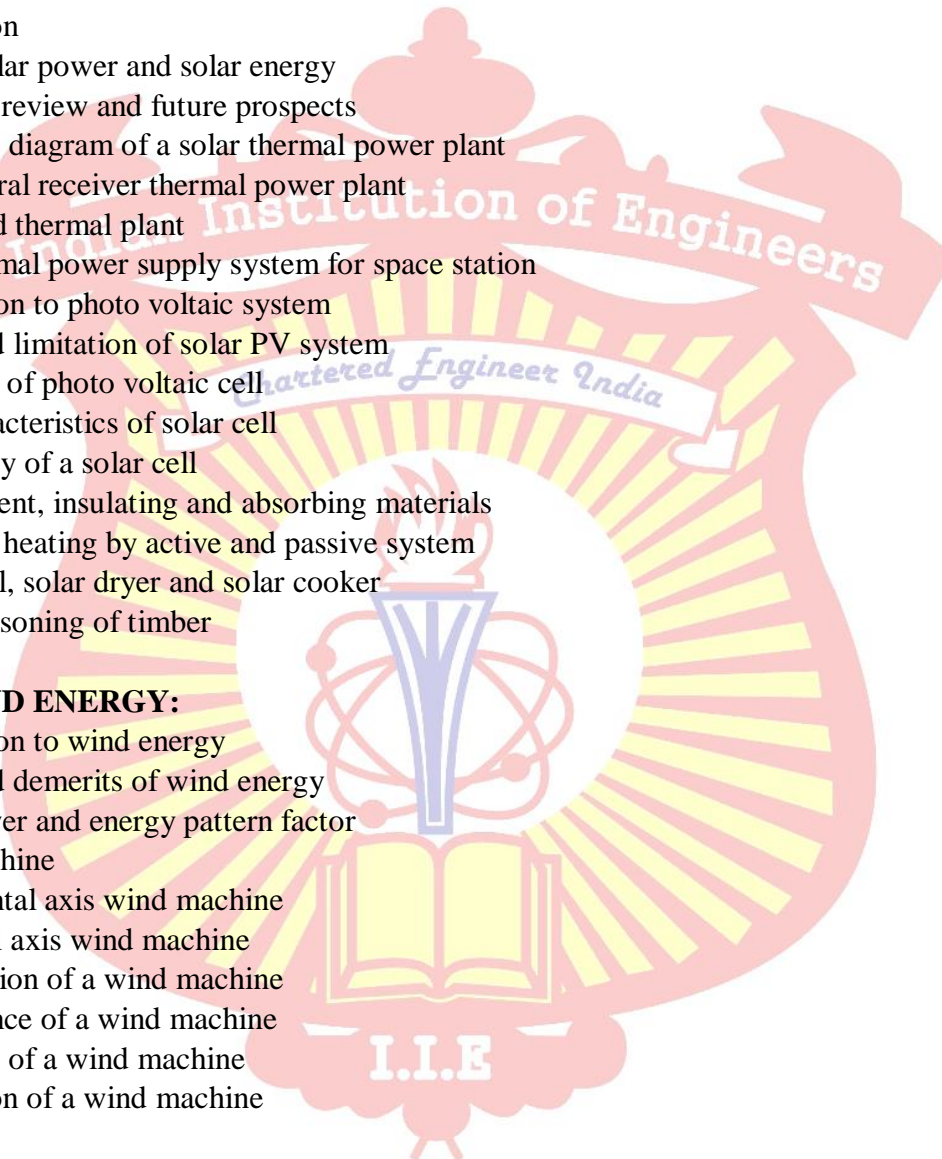
- 2.1 Application
- 2.2 Unit of solar power and solar energy
- 2.3 Historical review and future prospects
- 2.4 Schematic diagram of a solar thermal power plant
- 2.5 Solar central receiver thermal power plant
- 2.6 Solar pond thermal plant
- 2.7 Solar thermal power supply system for space station
- 2.8 Introduction to photo voltaic system
- 2.9 Merits and limitation of solar PV system
- 2.10 Principle of photo voltaic cell
- 2.11 V-I characteristics of solar cell
- 2.12 Efficiency of a solar cell
- 2.13 Transparent, insulating and absorbing materials
- 2.14 Building heating by active and passive system
- 2.15 Solar still, solar dryer and solar cooker
- 2.16 Solar seasoning of timber

### UNIT-3 WIND ENERGY:

- 3.1 Introduction to wind energy
- 3.2 Merits and demerits of wind energy
- 3.3 Wind power and energy pattern factor
- 3.4 Wind machine
  - 3.4.1 Horizontal axis wind machine
  - 3.4.2 Vertical axis wind machine
- 3.5 Site selection of a wind machine
- 3.6 Maintenance of a wind machine
- 3.7 Efficiency of a wind machine
- 3.8 Application of a wind machine

### UNIT-4 BIO-GAS ENERGY:

- 4.1 Introduction to bio-gas energy
- 4.2 Properties of bio-gas
- 4.3 Principle of bio-gas production
- 4.4 Chemical and microbiological processors
- 4.5 Factors which affects bio-gas production
- 4.6 Different feed stocks for bio-gas production



- 4.7 Classification of bio-gas plant
  - 4.7.1 Fixed dome type
  - 4.7.2 Floating type
- 4.8 Comparison between fixed dome and floating type bio-gas plant
- 4.9 Site selection of bio-gas plant
- 4.10 Selection of size and specification of bio-gas plant
- 4.11 Water removing devices
- 4.12 Maintenance of bio-gas plants
- 4.13 Bio gas lamp and chulha
- 4.14 Bio gas storage and transportation
- 4.15 Purification of bio-gas
- 4.16 Environmental effect of bio-gas plant
- 4.17 Visit to a bio-gas plant
- 4.18 Preparation of a project report on a bio-gas plant

**UNIT-5 OCEAN ENERGY:**

- 5.1 Introduction to ocean energy
- 5.2 Types of ocean energy
  - 5.2.1 Open cycle
  - 5.2.2 Closed cycle

**UNIT-6 APPROPRIATE TECHNOLOGY:**

- 6.1 Introduction to appropriate technology
- 6.2 Concepts of appropriate technology
- 6.3 Need of appropriate technology
- 6.4 Merits and demerits
- 6.5 Comparison between appropriate and modern technology
- 6.6 Application

**Reference Books:**

1. Energy technology S.Rao & B.B. Parulekar
2. Non-conventional Energy Sources A.N. Mathur & N.S.Rathore
3. Non-conventional Sources D.M. Agrawal & S.K. Bhatnagar of energy and appropriate technology
4. Non-conventional Energy Sources G.D.Rai
5. Solar Energy Garg & Prakash