

Advanced Renewable Energy Systems

Questions bank

Chapter 1

Introduction

Q.1 Explain the impact of renewable energy generation on environment in detail.

Q.2 How does environment get affected by the use of the renewable energy? And also discuss GHG emissions from the various energy sources.

Q.3 Explain the influence of different renewable energy sources with special reference to the global warming context.

Q.4 Explain the consequences of greenhouse effect.

Q.5 Explain the Importance of renewable sources of energy

Q.6 Summarize about Indian energy scenario

Q.7 Summarize about World energy scenario

Q.8 Explain about the Environmental consequences of fossil fuel

Q.9 Explain in detail about the Types of renewable energy systems

Q.10 List the Advantage and Disadvantages of conventional energy systems

Q.11 List the Advantage and Disadvantages of non – conventional energy systems

Chapter 2

Wind Energy

- 1 Distinguish clearly between (a) Constant speed constant frequencies WTG unit. (b) Variable speed constant frequency WTG system. (c) Nearly constant speed constant frequency system.**
- 2 Why a tall tower is essential for mounting a horizontal axis wind turbine?**
- 3 With a neat diagram, explain how wind energy can be converted into electrical energy.**
- 4 Explain the principle and application of wind electric system. State the basic Components and their working in wind electric system.**
- 5 Explain with a neat diagram the working of various types of wind generators.**
- 6 Explain briefly about the horizontal wind mills with neat sketch?**
- 7 Explain briefly about the vertical wind mills with neat sketch?**
- 8 Explain the terms**
 - i. Yaw control**
 - ii. Pitch control**
 - iii. Teethering control**
- 9 Write short notes on (a) Application of wind energy (b) Savonius rotor (c) Darrieus rotor (d) Wind energy storage.**
- 10 What are the most favorable sites for installing of wind turbines?**

Chapter 3

Solar Energy

- 1 Describe thermal energy storage system of solar energy.**
- 2 Define solar irradiance, solar constant, extraterrestrial and terrestrial radiations. What is the standard value of solar constant?**
- 3 Explain the depletion process of solar radiation as it passes through the atmosphere to reach at the surface of the earth.**
- 4 Define the terms: altitude angle, incident angle, zenith angle, solar azimuth angle, latitude angle, declination angle, and hour angle.**
- 5 Explain the construction and principle of operation of a sunshine recorder**
- 6 Describe the working of solar thermal power plant.**
- 7 Describe the working of central receiver or tower power plant.**
- 8 Explain the principle of working of solar pond.**
- 9 With the help of schematic diagram, explain the working of solar pond electric power plant**
- 10 Write short notes on V-I characteristics on PV cell.**
- 11 Explain the types of PV Cell.**
- 12 Discuss the types of PV system.**

Chapter 4

Bio Mass Energy

- 1 Write short notes on Biomass Resources.**
- 2 Explain the Biomass Energy Conversion process.**
- 3 Write short notes on cogeneration in Biomass.**
- 4 What do you understand by geothermal energy?**
- 5 What are the merits and demerits of geothermal energy?**
- 6 Explain various types of geothermal resources.**
- 7 Describe various energy extraction technologies used with hydrothermal resources.**
- 8 What are the environmental impacts of geothermal energy?**
- 9 What are the principles on which turbines work?**
- 10 What are the various components of a small hydropower plant or a micro hydel scheme?**
- 11 Explain various types of turbines considered for use in micro hydro resources.**
- 12 Compare the relative advantages and disadvantages of Pelton and Turgo turbines.**

Chapter 5

Energy Storage Systems

Q. 1 List different types of Energy storage system.

Q.2 Explain in detail Electrochemical storage system.

Q.3 Explain in detail Mechanical Energy storage system.

Q.4 Explain in detail Electrical Energy storage system.

Q.5 Explain in detail Thermal Energy storage system.

Q.6 Explain in detail Battery Management System.

Q.7 Explain the role of Energy storage system by view point of Electrical Network Operator.

Q.8 Explain the role of Energy storage system by view point of End User.

Q.9 Explain the role of Energy storage system by view point of Electrical Energy Generator.

Q.10 Explain the role of Distributed Generation and inter-connection to power Grid.