Question Bank of RES

Module 1

* Describe briefly the conventional and non-conventional energy sources.
* What are the advantages and limitations of renewable energy sources?
* What is meant by renewable energy sources? Explain in brief these energy sources with special references to India context around the world.
* Discuss the main features of various types of renewable and non-renewable energy sources and explain the importance of non-conventional energy sources in the context of global warming.
* Discuss renewable energy availability in India and worldwide.
* Discuss causes of energy scarcity and solution to energy scarcity.
* With neat sketch, explain important parts of flat plate air and liquid collectors and concentrating collectors.
* With the help of diagram, explain solar cooker and write advantages and disadvantages of it.
* With the help of diagram, explain solar water heating system and write advantages and disadvantages of it.
* Discuss the various material aspects of solar collector.
* Explain with a neat sketch Heliostat electric generating plant.
* With the help of diagram, explain solar pond with heat cooling tower and write advantages and disadvantages of it.
* Explain with a neat sketch Stirling Engine System, Working of Stirling or Brayton Heat Engine, Solar Collector Systems into Building Services.
* With the help of neat diagram, explain any of the dryer.

Module 2

**Solar Cells**

* With a neat sketch, explain key elements of photo – voltaic cell.
* Describe principle of solar PV conversion
* State application of solar PV systems.
* Draw and explain I-V characteristics of solar cell, fill factor and the factors limiting the efficiency of the solar cell.
* Explain the solar cell materials.
* Compare a box type solar cooker with a concentrating type solar cooker. Discuss their construction details.
* Explain the difference between solar thermal and solar photo voltaic energy based converters. Compare their efficiency and their pros and cons.
* Draw the characteristics of a photo voltaic cell, how is it modelled using an electric circuit?
* Explain how heat can be transformed into mechanical energy using a Stirling Engine.
* Explain the prospects on worldwide and India wind energy Scenario.
* Describe the main considerations in selecting a site for wind generators.
* What is the basic principle of wind energy conversion?
* Derive the expression for power developed due to wind
* Discuss the advantages and disadvantages of WEC systems.
* Explain how wind is generated and the energy in it as a function of wind speed.

Module-3

**Hydrogen Energy**

1. Discuss the benefits of hydrogen energy.

2. State and explain methods of hydrogen production technologies.

3. Discuss the hydrogen energy storage methods

4. Discuss the applications, advantages, and disadvantages of hydrogen energy.

5. Mention the problems associated with the development and applications of hydrogen energy.

6. Explain the thermochemical hydrogen production technology.

7. What are the benefits of Hydrogen Energy. How is Hydrogen produced?

Please study characteristics of solar PV cell and it's equivalent circuit.

Comparision of solar thermal and PV systems.

Production of Hydrogen.

Stirling engine and how it works and how it can be used to generate electricity?

Kinetic energy in the wind, power as a function of wind speed

KVIC digester,

Single/Two basin tidal plants,

Oscillating water column, Salters duck,

Open cycle OTEC,

T-S diagram for OTEC.