Unit-I:Introduction

Part-A (2 Marks)

1. What is meant by Solar Energy?
2. List the drawbacks of Solar Energy.
3. Define solar constant.
4. Mention the ways of solar energy can be utilized.
5. What are the performance indices of a solar collector?
6. List out the advantages and disadvantages of air flat plate collector.
   Advantages.
7. List the application of solar PV system.
8. Name the types of concentrating collectors.
9. What are the merits of solar cooker?
10. List the different modes of solar cooling.

Part-B (16 Marks)

1.	Draw illustrative diagram showing all the important components of solar heating and solar cooling unit. Explain the working principles of these devices.	(16)
2.	Describe the photovoltaic principles of solar power generation. Compare the different types of solar cells with respect to power output and efficiency.	(16)
3.	Draw schematic diagram of solar thermal power plant used for power production and explain the operation of this system in detail.	(16)
4.	Write briefly about characteristics and principles of any three different types of solar collectors. Draw diagrams illustrating the constructional features of these collectors.	(16)
5.(i).	Discuss briefly about a) Solar drying	(8)
(ii).	b) solar cells	(8)

Unit-II : Solar Energy

Part-A (2 Marks)

1. List out the factor led to accelerated development of wind power.
2. What are the features prefer for the wind turbine site?
3. Draw the power Vs wind speed characteristics.

4. Draw the block diagram of WECS.
5. What are the types of generator drive for the operation of WECS?
6. List out the demerits of WECS.
7. List the components of wind turbine generator units.
8. Name the two natural phenomena in the atmosphere of different origins.
9. What are the characteristics of good wind power site?
10. What are the features of lift and drag?

Part-B (16 Marks)

1. Explain in detail about the performance and efficiency of different types of wind mills. (16)
2. Describe with a neat sketch the working of a wind energy conversion system (WECS) with its main components. (16)
3. Explain the working of a horizontal axis wind turbine driven generator with a diagram. Show the mechanism for the automatic reorientation of the turbine axis along the wind direction. (16)
4. Compare the performance of horizontal and vertical axis wind mills. (16)
5. (i) Discuss briefly about (8)
   a) Performance of wind mills
   (ii) b) Wind power generation in India (8)

Unit-III : Wind Energy

Part-A (2 Marks)

1. What is Biofouling?
2. Define tidal range.
3. Define the following terms a) Spring tides b) Neap tides.
4. List out the Limitations of tidal energy.
5. Define OETC.
6. List out the disadvantages of small hydro schemes.
7. Mention the types of tidal power plants.
8. State the advantages of wave energy generation.
9. List the major components of small hydropower projects.
10. What are the important components of a tidal power plant?

Part-B (16 Marks)

1. With relevant diagram, explain the operation of tidal power plant. (16)
2. Draw and explain the following cycles (8)
   a) Open OTEC
   b) Closed OTEC (8)
3. What is wave energy? Explain the wave energy components with neat diagram. List out the merits and demerits. (16)

4. Draw the layout of the micro-hydro scheme and explain its components. What are its advantages and disadvantages? (16)
5. Explain in detail the general arrangements for generating units in tidal power plants. What are its merits and demerits? (16)

Unit-IV : Biomass Energy

Part-A (2 Marks)

1. Classify the biomass resources.
2. What are the categories of scope of biomass energy?
3. List the secondary energy forms of biomass.
4. List the factors affecting biodigestion or generation of gas.
5. What is meant by biogas plant?
6. List out the biomass energy resources from waste.
7. State the Features of batch plant.
8. Mention some advantages of fixed dome type plant.
9. What are the advantages of bio-diesel as engine fuel?
10. Write any two benefits of cogeneration

Part-B (16 Marks)

1. Describe in detail the construction and working of various types of bio-gas plants. State the merits and demerits of the biogas power plant. (16)
2. List out the various points to be carried out for selection of site for a biogas plant. (16)
3. Write briefly on power production from agricultural waste. Draw relevant sketches and point out the relative merits of this technique. (16)
4. What is meant by cogeneration? How they are classified? Explain its principles. (16)
5. Sketch and describe any one type of bio-mass gas generation plant. Mention 4 uses of the biogas produced. (16)

Unit-V : Other Renewable Energy Sources

Part-A (2 Marks)

1. What are the three parts of earth?
2. State plate tectonics.
3. Mention the types of geo thermal resources.
4. Define magma.
5. What are the types of geothermal power generation?
6. Write the field of utilization of geothermal energy.
7. What are the advantages of geothermal energy?
8. What are the technical parameters of a fuel cell?

9. What are configurations of stirling engine?

10. Mention the two parts of the crust.

Part-B (16 Marks)

1. Draw the schematic and explain the vapour dominated geo thermal plant. (16)

2. Describe the construction and working principle of geothermal power plants in detail. Enumerate the advantages and disadvantages of geothermal plant. (16)

3. Explain in detail any one type of geothermal power plant. Compare its efficiency with tidal power plant. (16)

4. Compare tidal power plant with geothermal power plant. (16)

5. What is Stirling engine? Explain its types. (16)