



**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**  
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**QUESTION BANK**  
**(DESCRIPTIVE)**

**Subject with Code :** Design of Solar and Wind Systems(19ME3120)**Course & Branch:** M. Tech -ME  
**Year & Sem:** II-M. Tech & I-Sem(Thermal Engineering) **Regulation:** R19

**UNIT –I**

**Introduction to Conventional sources of energy, Alternative energy sources, Solar energy**

1		Explain in detail about conventional sources of energy.	L2	CO1	12M
2		What are the alternate sources of energy? Explain any three in detail.	L1	CO1	12M
3		Define solar radiation. Explain the process of capturing solar radiation.	L1 &L 2	CO1	12M
4		Explain with neat sketches different types of concentrating type collectors.	L2	CO1	12M
5	a)	Identify the applications of non-concentrating type collectors.	L3	CO1	6M
	b)	List out the applications of concentrating type collectors.	L1	CO1	6M
6		How to estimate solar radiation?	L1	CO1	12M
7		Describe solar pond with neat sketch.	L1	CO1	12M
8	a)	What are the advantages of non conventional energy sources?	L1	CO1	6M
	b)	What are the limitations of conventional energy sources?	L1	CO1	6M
9		What are the various methods to store solar energy? Discuss in detail any two processes.	L1 &L 6	CO1	12M
10	a)	Express the estimation process of solar radiation.	L2	CO1	6M
	b)	Illustrate on direct and indirect utilization of solar energy.	L2	CO1	6M

**UNIT –II**

**Nuclear Energy**

1		What is the potential of Nuclear Power as an Energy Resource?	L1	CO2	12M
2		Elucidate the International Nuclear Policies and Regulations.	L2	CO2	12M

3		Discuss the different types of Nuclear energy technologies?	L6	CO2	12M
4		Summarize notes on Nuclear power plants in India.	L2	CO2	12M
5		What is Nuclear fission? Differentiate between Nuclear fusion and fission?	L1 &L 4	CO2	12M
6	a)	What are the advantages of nuclear energy?	L1	CO2	6M
	b)	List all the disadvantages of nuclear energy?	L1	CO2	6M
7		Describe the components of a nuclear reactor?	L1	CO2	12M
8	a)	Explain about Advanced Gas Cooled reactor with a neat sketch?	L2	CO2	6M
	b)	Describe Fast Breeder reactor with a line diagram?	L1	CO2	6M
9		Discuss in detail about Nuclear fusion and its applications	L6	CO2	12M
10		Define Nuclear Waste and Why its proper disposal is so important?	L1	CO2	12M

### UNIT -III

#### **Wind Energy and Biomass**

1		Elucidate the wind energy characteristics.	L2	CO3	12M
2		Elaborate the factors of a site selection for installing wind turbines.	L6	CO3	12M
3		Classify wind energy conversion systems and explain.	L2	CO3	12M
4	a)	What is Betz Model?	L1	CO3	6M
	b)	What are the applications of wind energy?	L1	CO3	6M
5		Compare the advantages and disadvantages of wind energy?	L2	CO3	12M
6		Explain the availability of Geothermal energy and its sources in India?	L2	CO3	12M
7	a)	What is Geothermal energy? Where it is found?	L1	CO3	6M
	b)	Enumerate the characteristics of Geothermal energy?	L1	CO3	6M
8	a)	Discuss on Geothermal applications.	L6	CO3	6M
	b)	Summarize about the economics of Geothermal energy.	L2	CO3	6M
9		Describe the processes of power generation from Geothermal heat.	L1	CO3	12M
10		Explain about the sustainability of Geothermal Sources and also status of Geothermal Technology.	L2	CO3	12M

**UNIT –IV****Hydrogen Energy, Hydrogen Production and Storage of Hydrogen**

1		Explain about hydrogen and its energy?	L2	CO4	12M
2	a)	How Hydrogen can be a renewable source of energy?	L1	CO4	5 M
	b)	Identify the applications of hydrogen?	L3	CO4	5 M
3		Elaborate the production process of hydrogen by direct electrolysis of water	L6	CO4	12M
4		Discuss any two methods of hydrogen production.	L6	CO4	12M
5	a)	How hydrogen can be a fuel for vehicles?	L1	CO4	6M
	b)	Illustrate the sources of production of hydrogen.	L2	CO4	6M
6	a)	What are the different methods of hydrogen production?	L1	CO4	6M
	b)	Summarize notes on hydrogen fuel for vehicles.	L2	CO4	6M
7		Describe any two biological methods of hydrogen production.	L1	CO4	12M
8		Explicate Photo-electrochemical hydrogen production process with a neat sketch.	L2	CO4	12M
9		Explain in detail about hydrogen storage methods.	L2	CO4	12M
10		Elucidate the process of thermal decomposition of water.	L1	CO4	12M

**UNIT –V****Direct Energy Conversion**

1		What is meant by Direct energy conversion? What are the principles of Direct energy conversion?	L1	CO5	12M
2	a)	What is a Fuel cell and write about its construction?	L1	CO5	6M
	b)	Compare the advantages and disadvantages of fuel cell.	L4	CO5	6M
3		List all the advantages and disadvantages of hydrogen fuel cell.	L1	CO5	12M
4		Describe the construction and working of thermo electric generator with a neat sketch.	L1	CO5	12M
5	a)	Summarize notes on hydrogen fuel cell.	L2	CO5	6M
	b)	What is Thermo electric effect? Write the principle of thermo electric generator.	L1	CO5	6M
6		Explain about Magneto Hydrodynamic Generator.	L2	CO5	12M
7	a)	Illustrate an Open Cycle MHD System.	L2	CO5	6M

	b)	Describe the Closed Cycle MHD System.	L1	CO5	6M
8		Discuss about photovoltaic cell and its advantages.	L6	CO5	12M
9		Elucidate the general photovoltaic system with sketch.	L2	CO5	12M
10		Outline all the photovoltaic solar applications.	L2	CO5	12M

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