SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)

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<u>**QUESTION BANK (DESCRIPTIVE)**</u>

Subject with Code: Design of Solar and Wind Systems(20ME3124)   **Course & Branch**: M. Tech & ME

Year & Sem: II Year & I Sem   **Regulation: R20**

UNIT – I
Introduction, 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]& [L2]	[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)	Enumerate 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]& [L6]	[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]& [L4]	[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, Geothermal Energy

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 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

1		Explain about hydrogen and its energy?	[L2]	[CO4]	[12M]
2	a)	How can Hydrogen be a renewable source of energy?	[L1]	[CO4]	[6M]
	b)	Identify the applications of hydrogen?	[L3]	[CO4]	[6M]
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 can hydrogen 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 the principle of Direct energy conversion? Explain Direct energy conversion process with one example?	[L1]	[CO5]	[12M]
2	a)	What is a Fuel cell and write about its construction?	[L1]	[CO5]	[6M]
	b)	Discuss the advantages and disadvantages of fuel cell.	[L6]	[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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