Course Code: 19ME0321 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY :: PUTTUR (AUTONOMOUS)

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Non Conventional Energy Resources (19ME0321) **Course & Branch**: B. Tech & M.E

Year & Sem: III B. Tech & II-Sem

UNIT- I
INTRODUCTION, RENEWABLE ENERGY

1	(a)	Define conventional and Non-Conventional energy with examples.	[L1]	[CO1]	[6M]
	(b)	Outline the merits and demerits of Conventional energy sources?	[L2]	[CO1]	[6M]
2		How do you classify the energy sources and brief them.	[L1]	[CO1]	[12M]
3	(a)	Explain briefly any three renewable energies.	[L2]	[CO1]	[6M]
	(b)	" Economic growth of a country depends on Energy". Justify	[L5]	[CO1]	[6M]
4		What are energy resources available in India? Explain	[L1]	[CO1]	[12M]
5		Generate a report on the usage of energy around the world.	[L4]	[CO1]	[12M]
6	(a)	Assess the need of renewable energy resources.	[L5]	[CO1]	[6M]
	(b)	Describe the impact of Energy Utilization on environment.	[L2]	[CO1]	[6M]
7		Elucidate the power production process in Nuclear reactors with its merits and demerits	[L2]	[CO1]	[6M]
8		Describe Renewable Energy Scenario in Andhra Pradesh.	[L1]	[CO1]	[12M]
9	(a)	Express Secondary Energy Sources.	[L6]	[CO1]	[6M]
	(b)	Illustrate the working of thermal power plant with a neat sketch	[L2]	[CO1]	[6M]
10	(a)	Define briefly about Hydro Electric Energy.	[L1]	[CO1]	[6M]
	(b)	Interpret the merits and demerits of primary energy sources.	[L2]	[CO1]	[6M]

UNIT- II
SOLAR THERMAL CONVERSION, PHOTO VOLTAIC CONVERSION

1	(a)	Explain Solar Radiation.	[L2]	[CO2]	[6M]
	(b)	Outline the challenges and remedies associated in the use of solar energy.	[L2]	[CO2]	[6M]
2		What are the types of solar radiation measuring instruments? Explain the working of Sunshine recorder with a neat sketch.	[L2]	[CO2]	[12M]
3		Illustrate the functions of various components in flat plate collectors and also explain the working principle of flat plate collector	[L2]	[CO2]	[12M]
4	(a)	Discuss about Extraterrestrial and Terrestrial solar radiation.	[L2]	[CO2]	[6M]
	(b)	Derive an equation for the thermal analysis of a flat plate collector	[L4]	[CO2]	[6M]
5	(a)	Illustrate the working of the Pyrheliometer with a neat sketch.	[L2]	[CO2]	[6M]
	(b)	Differentiate flat plate collector with concentrating type collector	[L2]	[CO2]	[6M]
6	(a)	Describe with a neat sketch working of a solar water heating system.	[L2]	[CO2]	[6M]
	(b)	Illustrate the working of Pyranometer with a neat sketch.	[L2]	[CO2]	[6M]
7		Enumerate the different types of concentrating type collectors.	[L1]	[CO2]	[12M]
8		Explain the process of generation of power in solar pond with a neat sketch and also mention its merits and demerits.	[L5]	[CO2]	[12M]
9	(a)	Explain the process of solar photovoltaic conversion.	[L2]	[CO2]	[6M]
	(b)	How do you convert saline water into potable water? Explain	[L2]	[CO2]	[6M]
10	(a)	List out the applications of solar PV cell.	[L1]	[CO2]	[6M]
	(b)	What factors affect the performance of solar flat plate collector?	[L1]	[CO2]	[6M]

UNIT- III
WIND ENERGY, WIND ENERGY SYSTEM

1	(a)	Discuss the importance of measuring wind speed and name its measuring instruments.	[L6]	[CO3]	[6M]
	(b)	List out the uses and working of wind sock in aviation industry.	[L4]	[CO3]	[6M]
2	(a)	Explain the process of wind formation.	[L2]	[CO3]	[6M]
	(b)	List the merits and demerits of wind energy.	[L2]	[CO3]	[6M]
3	(a)	Describe the functions of wind energy system components.	[L1]	[CO3]	[12M]

	(b)	Elucidate the functioning of Cup Anemometer with a neat sketch	[L2]	[CO3]	[6M]
4		Illustrate the power generation process in HAWT with its merits and demerits.	[L2]	[CO3]	[12M]
5	(a)	Describe the working of VAWT with a neat sketch.	[L1]	[CO3]	[6M]
	(b)	Outline the advantages and disadvantages of VAWT.	[L2]	[CO3]	[6M]
6	(a)	Differentiate between HAWT and VAWT.	[L4]	[CO3]	[6M]
	(b)	Discuss about Savonius wind turbine with neat sketch.	[L6]	[CO3]	[6M]
7		Elaborate the factors to be considered in the selection of site for wind energy.	[L6]	[CO3]	[12M]
8	(a)	Explain briefly the functioning of Darrieus Wind Turbine.	[L2]	[CO3]	[6M]
	(b)	What is the impact of wind energy on environment?	[L1]	[CO3]	[6M]
9	(a)	Describe the working of ducted wind turbine with its merits and demerits.	[L1]	[CO3]	[6M]
	(b)	Explain the working of a hot wire anemometer with a neat sketch	[L2]	[CO3]	[6M]
10		Classify the wind energy systems and explain their working with neat sketch.	[L4]	[CO3]	[12M]

UNIT- IV
BIO-ENERGY & BIO FUEL

1	(a)	What is biomass and why is it called renewable energy?	[L1]	[CO4]	[6M]
	(b)	What are the different forms of bio-energy?	[L1]	[CO4]	[6M]
2	(a)	Explain about biomass direct combustion.	[L2]	[CO4]	[6M]
	(b)	Name various strokers used for the combustion of biomass and explain anyone with a neat figure.	[L1]	[CO4]	[6M]
3	(a)	Describe the working of Spreader stroker with a neat sketch.	[L1]	[CO4]	[6M]
	(b)	Evaluate the need of Fluidized Bed Combustion and explain it with a neat diagram.	[L5]	[CO4]	[6M]
4	(a)	What is biomass gasifier? Write its gasification reactions.	[L1]	[CO4]	[6M]
	(b)	How do you classify the gasifiers? Explain anyone in detail.	[L1]	[CO4]	[6M]
5	(a)	Classify the Biomass energy conversion systems and explain them in brief.	[L2]	[CO4]	[6M]
	(b)	What is meant by fermentation, aerobic, anaerobic digestion? Explain.	[L2]	[CO4]	[6M]
6		Explain the function of Deenbandhu biogas digester with a neat sketch and also mention its merits and demerits.	[L2]	[CO4]	[12M]
7	(a)	What are the factors affecting the generation of biogas?	[L1]	[CO4]	[6M]
	(b)	Explicate various steps involved in the production of Ethanol.	[L2]	[CO4]	[6M]
8		Explain the function of floating biogas digester with a neat sketch and also mention its merits and demerits.	[L2]	[CO4]	[12M]
9		Explain the working of biomass Cogeneration system with a neat sketch and also mention its applications.	[L2]	[CO4]	[12M]
10	(a)	Express the characteristics of biodiesel.	[L6]	[CO4]	[6M]
	(b)	Discuss the applications of Biomass Energy along with its impact on environment.	[L6]	[CO4]	[6M]

UNIT- V
OTHER SOURCES OF ENERGY, HYDROGEN FUEL

1		What is tide? Explain the basic components of a tidal power plant and state their merits and demerits.	[L2]	[CO5]	[12M]
2	(a)	List out the merits and demerits of hydrogen energy	[L4]	[CO5]	[6M]
	(b)	Explain the hydrogen production through Electrolysis process.	[L2]	[CO5]	[6M]
3		Explain the working of a fuel cell and their applications.	[L2]	[CO5]	[12M]
4		What is the nature of tidal power extracted from single basin arrangement and double basin arrangement?	[L1]	[CO5]	[12M]
5		Explain in detail the wave energy conversion by floats .	[L2]	[CO5]	[12M]
6		What is the basic principle of ocean thermal energy conversion? Name the main types of OTEC power plants? Describe their working.	[L1]	[CO5]	[12M]
7	(a)	What are the different methods of hydrogen storage ?	[L1]	[CO5]	[6M]
	(b)	Distinguish between wave and tidal energy.	[L5]	[CO5]	[6M]
8	(a)	How do you classify hydrogen production methods? Explain any one in	[L2]	[CO5]	[6M]

		detail			
	(b)	List all the applications of hydrogen?	[L4]	[CO5]	[6M]
9	(a)	What is the geothermal energy? Explain its extraction process.	[L1]	[CO5]	[6M]
	(b)	Explain Geothermal binary cycle power plant with neat diagram.	[L2]	[CO5]	[6M]
10		Explain in detail about the hybrid systems.	[L2]	[CO5]	[12M]

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