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Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025

Renewable Energy

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Explain with neat sketch working principle of flat plate collector.	10	L1	CO1
	b.	Describe with a neat sketch solar radiation at the earth's surface.	10	L2	CO1
OR					
Q.2	a.	With the help of neat diagram working principle of solar pond. Explain briefly.	10	L2	CO1
	b.	Explain with neat sketch, the working of photovoltaic conversion of solar energy.	10	L2	CO1
Module – 2					
Q.3	a.	List the types of wind mills. Explain with neat sketch horizontal axis wind machine.	10	L1	CO2
	b.	What are the advantages, disadvantages and applications of wind energy?	10	L1	CO2
OR					
Q.4	a.	Describe with neat sketch, vertical axis wind turbines.	10	L2	CO2
	b.	A horizontal shaft propeller type wind turbine is located in area having following wind characteristics. Speed of wind 10 m/s at 1 atm and 15°C. Determine the following: i) Total power density in wind stream, w/m^2 ii) Maximum possible obtainable power density in w/m^2 . iii) Actual obtainable power density in w/m^2 , assuming 40% efficiency. iv) Total power from wind turbine of 120 m diameter.	10	L4	CO2
Module – 3					
Q.5	a.	With the help of a neat sketch, explain Rankine cycle OTEC plant.	10	L2	CO3
	b.	Describe with neat sketch, working principle of hybrid cycle OTEC system.	10	L2	CO3
OR					
Q.6	a.	Sketch and explain double basin type tidal power plant operation.	10	L1 L2	CO3
	b.	List the different types of wave energy conversion devices. Explain with neat sketch hydraulic accumulator wave machine.	10	L1 L2	CO3

Module – 4

Q.7	a.	With neat sketch, explain essential elements of hydraulic electric power plant.	10	L2	CO4
	b.	With the help of a neat diagram, explain working principle of pelton wheel turbine.	10	L2	CO4

OR

Q.8	a.	What are the advantages and disadvantages of micro-hydro power plant?	6	L2	CO4
	b.	With neat sketch, explain bulb propeller turbine.	8	L2	CO4
	c.	Describe with neat sketch, working of francis turbine.	6	L2	CO4

Module – 5

Q.9	a.	Explain with a neat diagram working principle of vapour dominated geothermal system.	10	L2	CO5
	b.	What are the classification of geothermal energy power plant. Explain with neat sketch liquid dominated single flash geothermal power plant.	10	L1 L2	Co5

OR

Q.10	a.	With a neat sketch describe the production of hydrogen by electrolysis of water.	10	L2	CO5
	b.	Write a short notes on the following: i) Hydrogen storage method ii) Hydrogen transportation iii) Hydrogen utilization.	10	L1 L2	CO5
