RAMRAO ADIK INSTITUTE OF TECHNOLOGY, NERUL

(D Y Patil Deemed to be University)

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RAMRAO ADIK
INSTITUTE OF TECHNOLOGY
NAVI MUMBAI

Program: BTECH
End Semester Examination: B.Tech. Semester – VI
Course Code: ILOT6022
Course Name: Renewable and Distribute d Energy Systems
Time: 2 hour
Max. Marks: 60

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Instructions: 1. All three questions are compulsory.

Que. No.	Question	Max. Marks	CO	BT
Q1	Solve any **Four**			
i)	Explain the need, potential & development of renewable energy sources.	5	CO1	BT2
ii)	With the help of neat block/cross sectional diagram illustrate the process of Wind Energy Conversion in the Wind Power Plants (WPP).	5	CO2	BT5
iii)	Explain with labeled graph the PV-IV curve under standard test conditions?	5	CO3	BT2
iv)	What are the Biomass resources? Explain with the help of block diagram a Biomass based power generation system.	5	CO4	BT2
v)	Explain the Resources of Geothermal Energy?	5	CO5	BT2
vi)	List out any five merits and demerits of Ocean Thermal Energy Conversion (OTEC).	5	CO6	BT2

Que. No.	Question	Max. Marks	CO	BT
Q2 A	Solve any **Two**			
i)	Explain with a neat-labeled diagram the principle and working of **any one** of the given solar radiation measuring instruments: (i) Pyranometer (ii) Spectroradiometer (iii) Quantum Sensor and (iv) Sunshine recorder.	5	CO3	BT2
ii)	Compare renewable and non-renewable energy sources. (minimum 5 points)	5	CO1	BT5
iii)	Discuss the different types of wind turbine rotors used to extract wind in all types of wind turbines	5	CO2	BT2
iv)	Explain the methods of harnessing geothermal energy.	5	CO5	BT2
Q 2 B	Solve any **One**			
i)	Explain the various types of renewable energy systems with applications.	10	CO1	BT2
ii)	Determine the power output of a wind turbine whose blades are 10 m in diameter and when the wind speed is 5 m/s, the air density is about 1.2 kg/m^3 and the maximum power coefficient of the wind turbine is 0.30.	10	CO2	BT5

Que. No.	Question	Max. Marks	CO	BT
Q3	Solve any **Two**			
i)	Illustrate with neat diagram the basic principle of solar photovoltaic conversion.	10	CO3	BT5
ii)	Explain the combustion characteristics of bio-gas and its utilization for cooking.	10	CO4	BT2
iii)	Explain the working principle of Hydrogen production and storage?	10	CO6	BT2

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Course Outcomes (CO) -Learner will be able to:

CO1: Understand the renewable energy source

CO2: Analyse wind power plants

CO3: Understand and analyze Solar Photo Voltaic (SPV)systems

CO4: Explore the use of biomass energy as a renewable energy source

CO5: Apply Knowledge of working principle of geothermal energy systems

CO6: Evaluate and explore the capability of tidal, hydrogen and hybrid energy systems

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BT1- Remembering, BT2- Understanding, BT3- Applying, BT4- Analyzing, BT5- Evaluating, BT6- Creating