

Code: 20EE4501C

III B.Tech - I Semester – Regular Examinations - DECEMBER 2022

**RENEWABLE ENERGY RESOURCES
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Define Solar constant. What are the reasons for variation in solar radiation reaching the earth and that received outside the earth atmosphere?	L1	CO1	7 M
	b)	What is Concentrating collector and mention types of it? Describe any two types of concentrating collectors.	L2	CO1	7 M
OR					
2	a)	Write a short note on Thermal analysis of Flat plate collector.	L1	CO1	7 M
	b)	Why solar power is more preferable in the renewable energy sources and what is it's impact on the environment? Discuss in detail.	L4	CO1	7 M

UNIT-II					
3	a)	What are the different classifications of solar cell? And analyze the working principle of single crystalline solar cell.	L4	CO6	7 M
	b)	Draw the schematic diagram for Solar pond based electric plant along with its working.	L2	CO2	7 M
OR					
4	a)	With the help of a neat sketch explain about Solar heating system using water heating Solar collectors.	L2	CO2	7 M
	b)	Explain the procedure of power extraction from solar module.	L2	CO3	7 M
UNIT-III					
5	a)	Discuss the principle of operation of Horizontal axis wind turbine. Mention the reason why it is more preferable and also mention its advantages and disadvantages.	L4	CO4	7 M
	b)	What is the Betz criterion? Explain the reason why theoretical maximum efficiency of a wind turbine is limited to 59.3%?	L4	CO4	7 M
OR					
6	a)	Explain the combustion characteristics of biogas.	L4	CO4	7 M
	b)	What is meant by anaerobic digestion? List the factors that affect bio digestion.	L2	CO4	7 M

UNIT-IV					
7	a)	Explain how the heat is extracted from hot dry rocks?	L4	CO2	7 M
	b)	Discuss the advantages and disadvantages of wave energy.	L2	CO3	7 M
OR					
8	a)	What are the different geothermal resources and discuss them in brief.	L2	CO6	7 M
	b)	Explain the basic components of Tidal Power Plants and give their significance.	L2	CO2	7 M
UNIT-V					
9	a)	Discuss the principles of energy conversion system in detail.	L2	CO6	7 M
	b)	Discuss the working principle of Magneto Hydro Dynamic (MHD) power generation in detail.	L4	CO4	7 M
OR					
10	a)	Explain about Micro hydro Power plant with a neat layout.	L2	CO6	7 M
	b)	Analyze the working of a fuel cell with a neat sketch.	L4	CO5	7 M