ETC144

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RAMAIAH Institute of Technology

(Autonomous Institute, Affiliated to VTU)
(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with 'A+' Grade

MAKE UP EXAMINATIONS – JULY 2023

Program	:	**B.E. – Common to ECE / EEE / EIE /ETE / MLE / ME / IEM / CH**	**Semester**	:	**I**
Course Name	:	**Renewable Energy Sources**	**Max. Marks**	:	**100**
Course Code	:	**ETC144**	**Duration**	:	**3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

1.	a)	Explain the principles of Renewable energy.	CO1	(10)
	b)	Mention the five difference between Renewable and Non-Renewable source of energy.	CO1	(05)
	c)	Write a short note on the Internet of Energy (IoE).	CO1	(05)
2.	a)	With a block diagram explain the flow of Renewable energy (Solar Energy).	CO1	(10)
	b)	Briefly explain the Energy sustainability and Social implication of Renewable energy.	CO1	(10)

UNIT - II

3.	a)	Write a empirical equations used for estimating the solar radiation.	CO2	(05)
	b)	List the instruments used for measurement of solar radiation. Explain the instrument used for measuring the beam radiation with a neat sketch.	CO2	(10)
	c)	Define the following: i) Helio chemical process ii) Helio thermal process and iii) Helio electrical process.	CO2	(05)
4.	a)	What are the applications of photovoltaic cell? Mention any five.	CO2	(05)
	b)	What is solar cell? With a neat sketch explain the construction and working of photovoltaic system.	CO2	(10)
	c)	With a neat sketch explain the working of solar still.	CO2	(05)

UNIT - III

5.	a)	With advantages and limitations of wind energy over hydraulic energy, classify the wind mills.	CO3	(10)
	b)	With a neat line diagram, explain the working of Darrieus type vertical wind mill.	CO3	(10)
6.	a)	Explain the working of biomass conversion technology using fixed dome system with line diagram.	CO3	(10)
	b)	Mention the various types of gasifiers. With a neat line diagram explain the working of downdraft gasifier.	CO3	(10)

UNIT- IV

7.	a)	Mention the fundamental characteristics of tidal power and explain the working of harnessing tidal energy by barrage method.	CO4	(10)
	b)	Explain the working principle of OTEC and also highlight the various problem associated with OTEC.	CO4	(10)

8.	a)	With a neat line diagram explain the method adopted to harness the geothermal energy. Also mention the advantages and limitations.	CO4	(10)
	b)	What do you understand by spring and neap tides? What are the limitations of tidal energy?	CO4	(10)

UNIT - V

9.	a)	Define fuel cell and write the classification of fuel cell and also mention the advantages of fuel cell.	CO5	(10)
	b)	Write a note on the following: i) Zero energy concepts ii) Benefits of hydrogen energy.	CO5	(10)
10.	a)	With a neat sketch explain the working principle of fuel cell technology.	CO5	(10)
	b)	Write the application of hydrogen energy and also mention problems associated with hydrogen energy.	CO5	(10)

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