Code No: **R194203K** **R19** **Set No. 1**

IV B.Tech II Semester Regular Examinations, April – 2023

GREEN ENERGY SYSTEMS

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	Explain the working of Flat plate collector with a neat labelled sketch.	[7]
	b)	Discuss the differences between Pyrheliometer and Pyranometer	[8]
		(OR)	
2	a)	Explain about the different types of Renewable energy (RE) sources.	[7]
	b)	Describe different energy storage methods used in solar system.	[8]

UNIT II

3	a)	Classify various wind types and explain each in detail.	[7]
	b)	Enlist various methods of biomass energy conversion and explain any one in detail.	[8]
		(OR)	
4	a)	How wind energy systems are classified? Explain.	[7]
	b)	Enumerate the differences between aerobic and anaerobic digestion.	[8]

UNIT III

5	a)	Explain the three basic kinds of geothermal resources.	[7]
	b)	Discuss the potential and conversion techniques of ocean energy.	[8]
		(OR)	
6	a)	Explain hot dry rocks resources of geothermal energy.	[7]
	b)	Explain the principle of utilization and limitations of OTEC system.	[8]

UNIT IV

7	a)	List all the possible energy conservation measures possible in lighting system?	[7]
	b)	What do you mean by the term “demand site management”? Explain briefly.	[8]
		(OR)	
8	a)	Discuss the advantages of installing a ‘servo stabilizer’ for lighting circuits?	[7]
	b)	What is the role of energy-efficient compressors and pumps in energy-efficient systems? Explain.	[8]

UNIT V

9	a)	Discuss the benefits of green manufacturing systems in detail.	[7]
	b)	Write a short note on sustainable green production systems.	[8]
		(OR)	
10	a)	Name some eco-friendly materials and discuss their characteristics.	[7]
	b)	Explain the environmental impact of the current manufacturing practices and systems.	[8]

Code No: **R194203K** **R19** **Set No. 2**

IV B.Tech II Semester Regular Examinations, April – 2023

GREEN ENERGY SYSTEMS

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1 a) Explain in detail about the Solar Energy sources and also write about the merits and demerits of it. [7]
b) Explain the working principle of pyranometer. [8]

(OR)

2 a) Explain solar space heating system with a neat labelled sketch. [7]
b) Explain the working principle of solar ponds and solar cookers. [8]

UNIT II

3 a) Explain the working of horizontal axis wind mill in detail. [7]
b) Classify the bio gas digesters and explain any one in detail. [8]

(OR)

4 a) Explain Betz criteria in wind energy systems. [7]
b) Define Anaerobic Digestion. Explain with a neat Schematic Common Circular type of Digester. [8]

UNIT III

5 a) List and Explain the various application of geothermal energy. [7]
b) Analyze with neat sketch, about the Ocean Thermal Energy Conversion (OTEC). [8]

(OR)

6 a) Explain the merits and demerits of Geothermal Energy. [7]
b) Summarize the advantages and limitations of tidal power generation. [8]

UNIT IV

7 a) Give a short note on utilization of 'Day lighting'? [7]
b) Explain why centrifugal machines offer the greatest savings when used with variable speed drives? [8]

(OR)

8 a) Discuss the factors considered for selection of luminaire. [7]
b) Explain the working principle of a fuel cell with a labelled sketch. [8]

UNIT V

9 a) What is meant by zero waste manufacturing? Explain. [7]
b) Discuss the parameters considered while selection of recyclable and environmental friendly materials. [8]

(OR)

10 a) What is green manufacturing? State the advantages of vegetable based cutting fluids. [7]
b) Write short notes on alternate casting and joining techniques. [8]

Code No: **R194203K** **R19** **Set No. 3**

IV B.Tech II Semester Regular Examinations, April – 2023

GREEN ENERGY SYSTEMS

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	What is meant by extraterrestrial radiation? Explain.	[7]
	b)	What do you mean by passive solar space heating system? Explain.	[8]
		(OR)	
2	a)	Discuss the construction of solar pond and list the applications.	[7]
	b)	Explain the working principle of Photo Voltaic cell with a neat sketch.	[8]

UNIT II

3	a)	List and Explain the various characteristics of the wind?	[7]
	b)	Explain in detail aerobic digestion and different phases and the process involved in it.	[8]
		(OR)	
4	a)	Discuss the advantages and disadvantages of horizontal and vertical axis windmills.	[7]
	b)	Differentiate between the following methods of biogas generation. i) Pyrolysis ii) Combustion	[8]

UNIT III

5	a)	Explain the operation of dry steam geothermal power plant.	[7]
	b)	Discuss the factors which determine the maximum length and height of ocean waves	[8]
		(OR)	
6	a)	Illustrate various types of OTEC power plants.	[7]
	b)	List out the advantages and disadvantages of geo-thermal energy over other energy forms.	[8]

UNIT IV

7	a)	Explain the need for energy efficient motors in various applications.	[7]
	b)	Explain briefly the working principle of any one type of energy efficient compressor.	[8]
		(OR)	
8	a)	Write a short note on energy efficient lighting and control.	[7]
	b)	Write the checklist of good maintenance practices for proper motor operation?	[8]

UNIT V

9	a)	Discuss the environmental impact of current manufacturing systems.	[7]
	b)	Explain the role of green production systems in energy management.	[8]
		(OR)	
10	a)	Explain the benefits of green manufacturing systems?	[7]
	b)	Explain the implementation of efficient and sustainable green production systems.	[8]

Code No: **R194203K** **R19** **Set No. 4**

IV B.Tech II Semester Regular Examinations, April – 2023

GREEN ENERGY SYSTEMS

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	What are the components of flat plate collector and explain the function of each?	[7]
	b)	Explain the concept and working of central power tower plant.	[8]
		(OR)	
2	a)	Explain the construction and principle of operation of a sunshine recorder.	[7]
	b)	With a neat labeled sketch, explain the working of solar cooling plant.	[8]

UNIT II

3	a)	Explain the components and working of wind energy conversion system	[7]
	b)	Summarize various biomass feedstock used for bioenergy generation.	[8]
		(OR)	
4	a)	Discuss the principle involved in the measurement of speed of the wind.	[7]
	b)	Describe in detail, the various factors affecting bio digestion of a gas.	[8]

UNIT III

5	a)	Describe in detail, the operation of dry binary cycle geothermal power plant.	[7]
	b)	Explain the different economic and environmental considerations of tidal power plant	[8]
		(OR)	
6	a)	Explain with a neat sketch, the operation of flashed steam geothermal power plant.	[7]
	b)	Discuss, what is the minimum tidal range required for the working of tidal plant.	[8]

UNIT IV

7	a)	Explain the factors to be considered while selecting an energy efficient electric motor?	[7]
	b)	Discuss the working of ion exchange membrane fuel cell with a neat sketch.	[8]
		(OR)	
8	a)	Describe the advantages of providing transformer exclusively for lighting?	[7]
	b)	Explain the methods of capacity control in centrifugal air compressors?	[8]

UNIT V

9	a)	Discuss the factors involved in the selection of recyclable materials in manufacturing.	[7]
	b)	Explain the concept of sustainable green production systems in detail.	[8]
		(OR)	
10	a)	Explain briefly, the design of sustainable green production systems.	[7]
	b)	Discuss the parameters considered for the selection of environmental friendly materials.	[8]