

# CBCS SCHEME

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BETCK205E

## Second Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Renewable Energy Sources

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					
Q.1	a.	Explain the principles of renewable energy and its role in sustainable development.	08	L2	CO1
	b.	Discuss the availability of renewable energy sources in India and their potential for future energy needs.	08	L1	CO1
	c.	Write short notes on the Social implications of renewable energy adoption.	04	L2	CO1
OR					
Q.2	a.	Write suitable examples, explain solar, wind, tidal and geothermal energy systems.	10	L2	CO3
	b.	Describe the concept of the Internet of Energy (IoE) and its applications in modern energy systems.	06	L2	CO1
	c.	Briefly explain the importance of energy and sustainable development.	04	L2	CO1
Module - 2					
Q.3	a.	Write a neat sketch and explain the working principle of pyranometer.	08	L1	CO2
	b.	Describe the construction and working of a flat plate collector with a neat sketch.	08	L3	CO2
	c.	Write short notes on Solar Thermal Systems.	04	L2	CO2
OR					
Q.4	a.	Explain the principle and working of a Solar photovoltaic (PV) cell for electric power generation.	08	L3	CO2
	b.	Discuss the advantages, disadvantages and applications of solar PV systems.	08	L1	CO2
	c.	Write short notes on Solar Pond.	04	L2	CO2
Module - 3					
Q.5	a.	Describe the components of a Wind Energy Conversion System (WECS) and classify it into horizontal and vertical axis types.	08	L1	CO3
	b.	With a neat sketch explain the working of horizontal axis wind mill.	08	L3	CO3
	c.	Write short notes on major problems associated with wind power.	04	L2	CO3
OR					
Q.6	a.	Explain the process of photosynthesis and its importance in biomass energy generation.	06	L1	CO4
	b.	Describe with neat sketch fixed dome biogas plants.	08	L3	CO4
	c.	With a neat diagram, explain the working of a down draft biomass gasifier.	06	L3	CO4

## Module – 4

Q.7	a.	Explain the mechanics of tides and their potential as energy sources.	08	L2	CO3
	b.	With a neat sketch, describe the construction and working of a tidal power plant.	08	L3	CO3
	c.	Discuss the advantages and limitations of tidal energy.	04	L1	CO3

## OR

Q.8	a.	Explain the principle of Ocean Thermal Energy Conversion (OTEC) and describe its working cycle.	08	L2	CO5
	b.	Explain with sketch the working of Anderson Cycle OTEC.	08	L3	CO5
	c.	Discuss the problems associated with OTEC systems.	04	L1	CO5

## Module – 5

Q.9	a.	Explain the classification and operating principles of fuel cells.	08	L3	CO5
	b.	Describe the process of hydrogen production by electrolysis with a neat schematic diagram.	08	L3	CO5
	c.	Write short notes on Zero Energy Concepts.	04	L2	CO5

## OR

Q.10	a.	Discuss the benefits, storage methods and applications of hydrogen energy.	10	L3	CO5
	b.	Explain the problems and safety issues associated with hydrogen energy systems.	06	L1	CO5
	c.	Write a short note on the future prospects of green energy technologies.	04	L3	CO4

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