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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (S, FE) Examination May 2024 (2015 Scheme)

Course Code: BT362

Course Name: Sustainable Energy Processes

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1	a)	Elaborate on the various non renewable energy sources and explain the various concerns regarding the use of these.	(6)
	b)	Explain the strategies which our nation should follow to ensure sustainable power generations for the future.	(6)
	c)	'Sun is the ultimate source of all renewable energy sources '– Explain the statement using examples from various renewable sources of energy.	(3)
2	a)	What are the various components in a solar photovoltaic system? Cite the functions of each of them?	(5)
	b)	Explain how greenhouse effect has been used for our advantage in various solar power generation units?	(4)
	c)	Explain with diagrams the various concentrating solar power collectors?	(6)
3	a)	Explain about the flat plate solar collector using a diagram? What are the merits and demerits of the above collector system?	(7)
	b)	Explain and compare the various conventional and non-conventional sources of energy.	(4)
	c)	Hydroelectric power plants have been significant in electricity generation in India. Considering various factors, should hydroelectric power be suitably replaced by wind and solar energy in the future? Explain using statistical data.	(4)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	Explain the various components of a HAWT with help of a schematic diagram.	(10)

	b)	Elucidate any 5 factors that influence the biomass conversion process.	(5)
5	a)	Enlist the characteristics of a good location for windmill.	(5)
	b)	Compare the Darieus and Savonius VAWT based on design, principle and efficiency.	(5)
	c)	State Betz law? Describe how aerodynamic design of blades of a wind turbine can improve its efficiency.	(5)
6	a)	List out the various reactions involved in a biogas plant and the factors influencing them.	(5)
	b)	Explain the different processes occurring in a biomass gasifier?	(6)
	c)	List out the advantages and disadvantages of Biodiesel.	(4)

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PART C

Answer any two full questions, each carries 20 marks.

7	a)	Explain with a diagram the vapour dominated hydrothermal system.	(5)
	b)	Explain the different configurations of tidal power plants.	(10)
	c)	Explain about the Petro thermal resources.	(5)
8	a)	Explain the various components of an electric vehicle.	(10)
	b)	With a schematic diagram, explain the working of alkaline fuel cells and molten carbon fuel cells.	(10)
9	a)	Compare open and closed magneto-hydrodynamic systems by explaining the working of each.	(10)
	b)	Give the problems due to geothermal power plants and suggest solutions.	(7)
	c)	List out any 3 advantages and disadvantages of tidal power generation.	(3)

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