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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code:EE367

Course Name: NEW AND RENEWABLE ENERGY SYSTEMS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		Explain the importance of non-conventional energy resources. Mention their advantages.	(5)
2		Draw the schematic diagram of Pyrheliometer and explain its working.	(5)
3		What are the factors that affect the efficiency of solar cell? Explain.	(5)
4		Draw the block diagram of a hybrid cycle OTEC system and mention its advantages.	(5)
5		Discuss the advantages and disadvantages of wind energy conversion systems.	(5)
6		Write a short note on wind and its properties.	(5)
7		Describe the process of biomass to ethanol conversion.	(5)
8		"Satellites can be used for energy harvesting". How?	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	Explain different methods used for energy storage.	(6)
	b)	Compare non-concentrating and concentrating solar collectors.	(4)
10	a)	Write short notes on global energy scenario.	(4)
	b)	Explain in detail the stages of heat transfer process from solar radiation to the heat absorbing liquid medium in a flat plate collector.	(6)
11	a)	Give an overview of non-conventional energy potential and utilization of different states of India.	(5)
	b)	Explain the following i) inclination angle ii) zenith angle iii) solar azimuth angle iv) tilt angle iii) angle of incidence.	(5)

PART C

Answer any two full questions, each carries 10 marks.

12	a)	Explain the working of a solar thermal electric power plant with neat sketches.	(6)
	b)	Describe the Principle of operation of tidal energy conversion process.	(4)
13	a)	Draw the schematic and explain the working of a closed cycle OTEC plant.	(6)
	b)	Define the following terms associated with solar PV i) Fill factor ii) Conversion efficiency iii) Maximum power point iv) Poly crystalline cell.	(4)
14	a)	Compare the components and working of a standalone and grid connected PV system.	(5)
	b)	Explain the characteristics of a site suitable for the construction of a tidal power plant. List any two advantages and limitations of a tidal power plant.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15	a)	What is meant by lift and drag forces acting on wind turbine. Explain the importance of these forces in wind turbine design.	(4)
	b)	Explain the construction and working of fixed dome type biogas plant with the help of a figure.	(6)
16	a)	What are different methods used for the production and storage of hydrogen.	(4)
	b)	Explain the parts, their function and working of a wind power plant.	(6)
17	a)	Differentiate between the performance of horizontal axis and vertical axis wind turbines. Give one examples for each type.	(5)
	b)	Explain the operation of a phosphoric acid fuel cell with the help of a suitable diagram.	(5)

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