Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S,FE) Examination January 2023 (2015 scheme)

Course Code:EE367

Course Name: NEW AND RENEWABLE SOURCES OF ENERGY

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries5 marks. Marks

1		Explain the non-conventional energy resources available in Indian energy scenario.	(5)
2		Define the terms solar constant, solar altitude angle and solar azimuth angle?	(5)
3		Draw and Explain the VI characteristics of a solar cell. How does temperature affect the performance of solar cell?	(5)
4		Differentiate between ebb generation and flood generation in tidal plants.	(5)
5		Explain the lift and drag forces in wind and its importance in wind power generation.	(5)
6		Draw the block diagram of a typical wind energy conversion system and explain the working of wind power plant.	(5)
7		Draw the schematic of a KVIC type of bio gas plant	(5)
8		Explain how satellites can be used for energy harvesting?	(5)

PART B

Answer any two full questions, each carries10 marks.

9	a)	Elaborate the availability and limitations of conventional sources of energy and its impact on human life. What are the alternate solutions?	(10)
10	a)	Differentiate between flat plate collectors and solar concentrators	(5)
	b)	What do you understand by energy storage? Under what circumstances does energy storage become necessary?	(5)
11	a)	For a solar PV installation it is necessary to measure the global solar irradiance of the site. Suggest a suitable solar measuring instrument and explain its working	(10)

PART C

Answer any two full questions, each carries10 marks.

12	a)	Explain grid connected PV system with the help of block diagram and bring out the relative merits	(10)

13 a) Draw the block diagram and explain the working of Anderson cycle based OTEC system. (5)

b) Classify solar cell based on the type of material used. Explain each one. (5)

14 a) Explain the principle of operation of a tidal power plant. How it is classified? Draw the layout of a double basin tidal power plant and label all the components. Explain the function of each component (10)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Derive an expression for power extracted from wind. Write a short note on Betz criterion (10)

16 a) Explain how wind power plants are classified. Explain about Horizontal axis wind turbine? (5)

b) Explain any one type of fuel cell (5)

17 a) Draw the layout of a micro hydro project (5)

b) Explain the process of anaerobic digestion of biomass into biogas. (5)

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