Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
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	Discuss advantages and limitations of conventional energy sources	(5)
2	Define Solar Constant. Calculate the number of daylight hours in Srinagar for 22nd June .The latitude of Srinagar as 34⁰05'N.	(5)
3	Define (i) Open Circuit Voltage (ii) Short circuit Current (iii) Fill factor and (iv) Efficiency of the solar cell	(5)
4	Differentiate between Closed cycle and Anderson cycle OTEC	(5)
5	Explain the principle of wind energy conversion system with block diagram	(5)
6	List advantages and disadvantages of wind energy conversion system.	(5)
7	What is meant by small hydro project? Give its classifications.	(5)
8	Briefly explain the hydrogen energy system with necessary diagram	(5)

PART B
Answer any two full questions, each carries 10 marks.

9	a)	Write short notes on the advantage s and disadvantages of any three types of non conventional energy sources.	(6)
	b)	Draw and explain the operation of flat plate collectors	(4)
10	a)	Compare the construction and working of Pyranometer and Pyrheliometer.	(5)
	b)	Explain the thermal methods of energy storage.	(5)
11	a)	Derive the equation for collector efficiency of a flat plate collector.	(6)
	b)	Discuss the Indian Energy scenario.	(4)

PART C
Answer any two full questions, each carries 10 marks.

12	a)	Draw the block diagram of a solar thermal electric plant and explain its working.	(6)
	b)	What are the factors affecting the site selection of OTEC.	(4)
13	a)	Classify tidal power plants and brief explain any two of them.	(6)

    b) Explain stand-alone PV system with necessary diagram   (4)

14 a) Discuss the effect of temperature and insolation on the characteristics of solar cell. Draw the P-V characteristics of Solar cell under varying temperature and irradiation level   (6)

    b) What is meant by *"bio fouling"* and what is effect on OTEC. What are the methods used avoid this problem.   (4)

PART D
Answer any two full questions, each carries 10 marks.

15 a) Write brief notes on the classification of wind energy conversion system   (6)

    b) Explain the production of producer gas from biomass.   (4)

16 a) Compare the construction and performance of floating drum type and fixed dome type biogas plants with the help of neat sketches.   (6)

    b) Explain the factors that affect the nature of wind in an area.   (4)

17 a) Derive the expression for power output of a wind turbine.   (6)

    b) Discuss the selection criteria of turbines for a small hydro project.   (4)

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