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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Regular and Supplementary Examination December 2021 (2015 Scheme)

Course Code: ME403

Course Name: ADVANCED ENERGY ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1 a) Elaborate on the future demand of fossil fuels as conventional energy source. (5)

b) With the help of a schematic explain the components of a nuclear power plant. (5)

2 a) List the advantages and disadvantages of a hydro power plant over thermal power plant. (4)

b) Explain about the construction and working of a hydro power plant with the help of a neat layout. (6)

3 a) With the help of a neat sketch, explain the working and construction of central receiver type solar thermal electric power plant with heliostat. (10)

4 a) With a neat sketch explain the working of solar flat plate collector. (7)

b) List the different types of focussing type solar collectors. (3)

PART B

Answer any three full questions, each carries 10 marks.

5 a) With a neat schematic show the construction of a horizontal axis wind energy conversion system and explain its working. (6)

b) Explain briefly about solar-wind hybrid systems. (4)

6 a) Elaborate on the construction and working of the different types of vertical axis wind mills with sketches. (10)

7 a) Explain the construction and working of Janta (non-floating type) bio gas plant with the help of a neat sketch. (6)

b) Discuss briefly about the different steps involved in the conversion of biomass to biogas in a digester. (4)

8 a) Explain any one method of bio-chemical conversion of biomass. (5)

b) Discuss briefly about the trans-esterification process. (3)

c) Distinguish between pyrolysis and gasification process. (2)

PART C

Answer any four full questions, each carries 10 marks.

9	a)	With a neat sketch explain the working of a vapour dominated geothermal power plant.	(7)
	b)	What are the advantages of mini and micro hydro power plants over conventional hydro power plants?	(3)
10	a)	With a neat sketch explain the working of a Magneto Hydro Dynamic power generation unit.	(6)
	b)	List out the various applications of fuel cells.	(4)
11	a)	Explain the different methods to store hydrogen for energy conversion process.	(3)
	b)	With the help of a neat sketch, explain the construction and working of a geothermal fossil hybrid power plant.	(7)
12	a)	List out a few of the primary sources of air pollution and the different methods used to control it.	(7)
	b)	Explain the phenomenon of thermal pollution.	(3)
13	a)	Describe any wastewater treatment process with neat sketches.	(6)
	b)	Explain the phenomenon of green house effect.	(4)
14	a)	Explain briefly about the conditions which will lead to acid rain and also the harmful effects of acid rain.	(7)
	b)	List any three sources of land degradation.	(3)

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