Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Exam (FT / PT) April 2025 (2019 Scheme)

Course Code: MET458

Course Name: ADVANCED ENERGY ENGINEERING

Duration: 3 Hours

Max. Marks: 100

PART A

Answer all questions, each carries 3 marks. Marks

1	Write any three comparisons between BWR and PWR.	(3)
2	What are the functions of economizer and super heater in a steam power plant?	(3)
3	Explain the basic principle of wind energy conversion.	(3)
4	Discuss site selection for wind turbine.	(3)
5	Differentiate passive and active solar energy systems.	(3)
6	Distinguish between open-cycle and closed-cycle MHD system	(3)
7	Write notes on solar-wind hybrid systems.	(3)
8	Define Anaerobic digestion.	(3)
9	Comment on the safety issues related to the use of hydrogen as fuel.	(3)
10	Discuss on the cause and effect of eutrophication.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Explain the working and components of a gas turbine power plant with the help of a neat layout.	(10)
	b)	Discuss the merits and demerits of a nuclear power plant.	(4)

OR

12	a)	Explain the working and components of a steam power plant with the help of a neat layout.	(14)

Module II

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13 a) Discuss on the different types of solar energy collectors with neat sketch. (10)

b) Explain photovoltaic energy conversion. (4)

OR

14 a) Explain the construction and working a horizontal axis wind turbine with the help of neat sketches and compare them with Vertical axis wind turbines. (10)

b) How wind turbines are classified? (4)

Module III

15 a) Explain thermochemical and biochemical methods of biomass conversion. (10)

b) 'Biomass can be considered as a form of solar energy'. Discuss (4)

OR

16 a) Explain the constructional details and working of a fixed dome digester with the help of a neat sketch (10)

b) Write short notes on transesterification. (4)

Module IV

17 a) Differentiate between Open cycle and Closed cycle MHD power generation with neat sketches. (14)

OR

18 a) Discuss about any two types of wave energy devices, with neat sketches. (10)

b) Explain the working of hydrogen fuel cell. (4)

Module V

19 a) With a neat sketch explain the Greenhouse effect. What is global warming? List any four methods to reduce global warming. (14)

OR

20 a) Explain the environmental impact of renewable energy? (10)

b) Explain the sources of water pollution (4)

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