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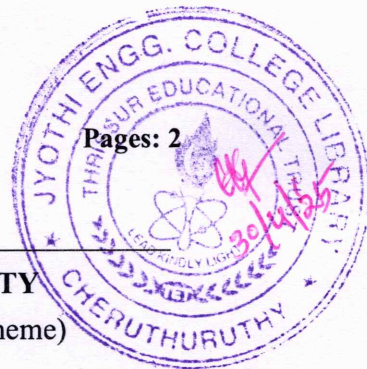
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Reg No.: _____

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

- 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)
