



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S7 (S, FE) Examinations May 2026 (2019 Scheme)

Course Code: MRT433

Course Name: RENEWABLE ENERGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

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| 1 | List any three limitations of conventional energy resources. | (3) |
| 2 | Compare stand-alone and grid-connected solar PV systems. | (3) |
| 3 | What is a hybrid OTEC system? Mention its advantages over open and closed cycles. | (3) |
| 4 | Differentiate between single-basin and double-basin tidal power plants. | (3) |
| 5 | List any three methods used for measuring wind speed. | (3) |
| 6 | Classify Wind Energy Conversion Systems (WECS) based on axis orientation and output power. | (3) |
| 7 | Explain the principle of biomass gasification. | (3) |
| 8 | Write a short note on the biomass energy program in India and its objectives. | (3) |
| 9 | Classify hydro power projects. | (3) |
| 10 | List the main methods of hydrogen production. | (3) |

PART B

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

Module I

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|----|---|-----|
| 11 | a) Classify non-conventional energy resources and explain any four in detail. | (8) |
| | b) Compare conventional and non-conventional energy resources. | (6) |

OR

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| 12 | a) Explain the process of solar thermal electric power generation with the help of a schematic diagram. | (10) |
| | b) List and explain at least four practical applications of solar PV systems in daily life and industry. | (4) |

Module II

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|----|---|-----|
| 13 | a) Explain the construction and working of a closed cycle (Anderson cycle) OTEC plant with a diagram. | (8) |
| | b) Discuss the site-selection criteria for an OTEC power plant. | (6) |

OR

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|----|---|-----|
| 14 | a) Explain the principle of tidal power generation with a neat diagram. | (6) |
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- b) Describe the main components of a tidal power plant and their functions. (8)

Module III

- 15 Explain the basic principle of Wind Energy Conversion Systems (WECS) with a neat diagram. (14)

OR

- 16 a) Explain in detail about vertical-axis wind turbines. (10)
b) Discuss the important site selection criteria for installing a wind power plant. (4)

Module IV

- 17 Explain the process of urban waste-to-energy conversion and its environmental benefits. (14)

OR

- 18 With neat labelled diagrams, explain the construction and working of KVIC model biogas plant and Janata model biogas plant. (14)

Module V

- 19 List and explain the major components of a small hydropower system. (14)

OR

- 20 a) Explain the principle of operation of a fuel cell with a neat diagram. (10)
b) Describe the methods of hydrogen storage. (4)
