

B

1000MRT433112401

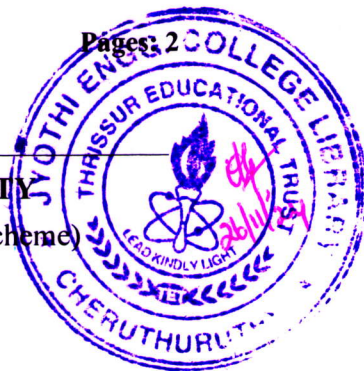
Pages: 2

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R, S) Examination November 2024 (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

- | | | |
|----|--|-----|
| 1 | Differentiate between Concentrating and flat plate type solar collectors. | (3) |
| 2 | Draw and Explain the VI characteristics of a solar cell. | (3) |
| 3 | Differentiate between ebb generation and flood generation in tidal plants. | (3) |
| 4 | Explain the site-selection criteria for OTEC plants | (3) |
| 5 | Explain how the direction of wind can be controlled in wind turbines. | (3) |
| 6 | Describe the process of converting wind energy into electrical energy | (3) |
| 7 | Explain the how urban waste is converted into useful energy | (3) |
| 8 | Briefly explain the working of a KVIC biogas plant with a neat diagram. | (3) |
| 9 | What is meant by small hydro project? Give its classifications. | (3) |
| 10 | What are fuel cells? Mention few applications of fuel cells. | (3) |

PART B

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

Module I

- | | | |
|----|--|------|
| 11 | a) Explain how energy resources are classified? | (10) |
| | b) Compare conventional and non-conventional energy resources. | (4) |

OR

- | | | |
|----|--|------|
| 12 | a) Explain the construction, working and components of a solar flat plate collector with neat diagram. | (10) |
| | b) What are the key advantages and challenges of using standalone photovoltaic (PV) cells for energy generation? | (4) |

Module II

- | | | |
|----|--|------|
| 13 | Explain Anderson cycle and Hybrid OTEC power plants. Elaborate the working principle with neat diagrams. | (14) |
|----|--|------|

OR

- 14 a) Explain Double basin and single basin tidal power plants. (10)
b) What is Biofouling? Explain the methods to control Biofouling. (4)

Module III

- 15 With neat sketches, explain the various types of rotors used in a wind energy conversion system. (14)

OR

- 16 Derive the wind power equation and define i) wind efficiency factor of wind turbine ii) Wind energy pattern factor and iii) Wind power density. (14)

Module IV

- 17 What is Biogas? How it is produced? Illustrate the types of Biogas plants using neat diagrams. (14)

OR

- 18 Explain various biomass conversion techniques. (14)

Module V

- 19 Explain the components of a micro hydel power plant with neat diagram. (14)

OR

- 20 a) Explain different methods of Hydrogen storage. (7)
b) Explain the conversion efficiencies and types of losses in fuel cells. (7)
