

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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

Course Code: ECT468**Course Name: RENEWABLE ENERGY SYSTEMS****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

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|----|--|-----|
| 1 | List any three advantages of conventional energy sources. | (3) |
| 2 | Explain about the different classifications of hydro power stations. | (3) |
| 3 | What are the different generations of solar cells? | (3) |
| 4 | Compare grid interfacing with isolation and without isolation. | (3) |
| 5 | Differentiate between lift and drag turbines. | (3) |
| 6 | Explain wind energy conversion system with the aid of block diagram. | (3) |
| 7 | How power quality management is being done? | (3) |
| 8 | What is grid Islanding? | (3) |
| 9 | Differentiate between smart grid and conventional grid. | (3) |
| 10 | What are the classifications of SCADA system? | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

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|----|---|-----|
| 11 | a) Give an overview of non-conventional energy sources. | (8) |
| | b) What are the main applications of solar energy? | (6) |

OR

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| 12 | a) How bio-fuels are formed and also explain briefly about any two types of biofuels. | (8) |
| | b) Explain the use of biomass as energy source. | (6) |

Module II

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|----|---|-----|
| 13 | a) Explain the working of tandem solar cells. | (8) |
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- b) Explain the term MPPT and what are the different methodologies used? (6)

OR

- 14 a) Describe the working of grid connected and stand-alone solar PV systems. (8)
b) Illustrate the working principle of PECVD technique. (6)

Module III

- 15 a) With neat sketches explain the main components of a wind turbine. (8)
b) List out the advantages and disadvantages of horizontal axis wind turbines. (6)

OR

- 16 a) Explain briefly about a) WARP b) TARP (8)
b) With the help of block diagram explain briefly about SCIG systems. (6)

Module IV

- 17 a) Explain the main factors which influences the PV/WECS on system transient response. (8)
b) What are the different techniques used for network voltage management? (6)

OR

- 18 a) What are the main objectives of islanding? Explain about the different islanding methods. (14)

Module V

- 19 a) Give an overview on major smart grid technologies that enable better energy management and improve overall performance. (8)
b) Explain the different smart metering protocols. (6)

OR

- 20 a) Explain the different layers of SCADA system architecture. (8)
b) Explain the working of a smart meter with necessary diagrams. (6)
