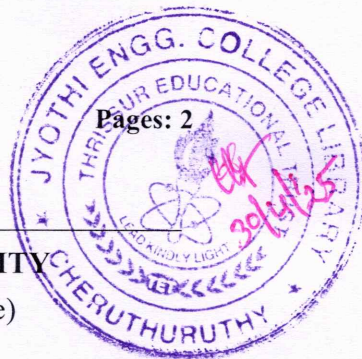Reg No.:_____   Name:_____

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

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

11 a) Give an overview of non-conventional energy sources.   (8)

    b) What are the main applications of solar energy?   (6)

OR

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

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)

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