

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Regular and Supplementary Examination December 2021 (2015 Scheme)

**Course Code: EE403****Course Name: DISTRIBUTED GENERATION AND SMART GRIDS**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 5 marks.***Marks**

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| 1 | Compare smart grid with conventional utility grid. | (5) |
| 2 | With the help of a neat sketch explain any two type Solar cells used in PV system. | (5) |
| 3 | What you mean by Tariff? Briefly explain two part and maximum demand tariffs. | (5) |
| 4 | What are the benefits of Demand Response? | (5) |
| 5 | Explain the applications of SANET in Smart Grid. | (5) |
| 6 | What you mean by a smart substation? What are the advantages of a smart substation? | (5) |
| 7 | Write a short note on
i). THD ii). TIF | (5) |
| 8 | Explain any two harmonic sources in a grid. | (5) |

PART B*Answer any two full questions, each carries 10 marks.*

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| 9 | With a neat diagram, explain the configuration of AC microgrid. | (10) |
| 10 | a) Describe any two control functions of micro-resource controller (MC).
b) With the help of a block diagram, explain the working of a Combined Heat and Power (CHP) generation system. | (5)
(5) |
| 11 | a) What is a microgrid? What are the advantages of microgrid.
b) Explain the working of flywheel energy storage (FES) system. | (5)
(5) |

PART C*Answer any two full questions, each carries 10 marks.*

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| 12 | With a block diagram briefly explain the following:
i). Smart sensors ii). Phasor Measurement Unit(PMU) | (10) |
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- 13 a) Briefly explain the load shaping objectives and methodologies. (7)
b) Define Energy Management. (3)
- 14 a) List out the islanding scenarios and explain any two of them. (5)
b) A generating station has a connected load of 40 MW , a maximum demand of 20 MW and the annual load factor is 40%.. Calculate i). Demand factor ii). The total energy generated annually. (5)

PART D

Answer any two full questions, each carries 10 marks.

- 15 a) What are the benefits and challenges of Home Area Network(HAN)? (5)
b) What is Feeder Automation? What is the need for Feeder Automation (5)
- 16 a) Describe the characteristics of AMI? (5)
b) What are the various types of clouds? Explain (5)
- 17 List and explain various power quality issues with smart grids. (10)
