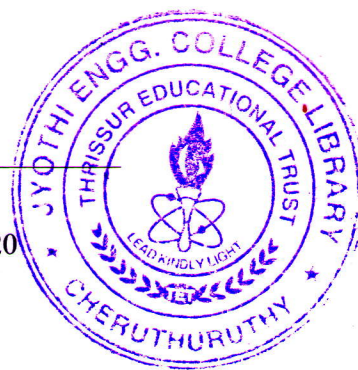


Reg No.: _____

00000EE403121903 Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Seventh semester B.Tech degree examinations (S), September 2020



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

- | | | |
|---|---|-----|
| 1 | Discuss the technical and economical advantages of microgrid. | (5) |
| 2 | Discuss the working principle and operation of ultra capacitor with necessary diagram. | (5) |
| 3 | Comment on the impact of DG integration on electricity market and distribution system. | (5) |
| 4 | Discuss the significance and characteristics of load curve. | (5) |
| 5 | Discuss the role of Sensor and Actuator Networks (SANETs) in smart grid implementation. | (5) |
| 6 | With a neat block diagram explain the Home Area Network (HAN) and its scope in successful implementation of smart grid. | (5) |
| 7 | Classify cloud computing based on its deployment and service. | (5) |
| 8 | Discuss the various harmonic sources and its effect on power quality. | (5) |

PART B

Answer any two full questions, each carries 10 marks.

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|----|---|------|
| 9 | Draw the layout of typical micro grid and explain the components in detail. | (10) |
| 10 | (a) Explain the functions of Central Controller in microgrid. | (5) |
| | (b) Explain how active and reactive power control is performed in Microgrid. | (5) |
| 11 | a) What is distributed generation? Explain how it enhances the performance of utility grid. | (5) |
| | b) Elaborate the concept of load sharing through power-frequency control in microgrid. | (5) |

PART C

Answer any two full questions, each carries 10 marks.

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|----|---|------|
| 12 | Give the layout and explain in detail the NIST architecture of smart grid and discuss the role of various domains and actors. | (10) |
|----|---|------|

- 13 Explain the various objectives and methodologies of load shaping with relevant waveforms. (10)
- 14 a) Discuss various electricity tariff schemes employed in utility grid. (5)
- b) Define (i) Maximum demand (ii) Diversity factor (iii) Plant Capacity factor (iv) Load Factor and (v) Utilization factor (5)

PART D

Answer any two full questions, each carries 10 marks.

- 15 Explain the key components and architecture of smart substation. (10)
- 16 Explain with suitable diagram (i) Private (ii) Public and (iii) Hybrid cloud computing (10)
- 17 (a) Explain various components of Feeder Automation. (5)
- (b) Elaborate the characteristics of Cloud Computing. (5)
