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.

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.

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)

****