

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

**Question Paper Code: 8001**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Eighth Semester

Electrical and Electronics Engineering

U19EEE24 – SMART GRID TECHNOLOGIES

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define smart grid and mention its advantages.	2	K1	CO1
2.	What are the challenges in smart grid?	2	K1	CO1
3.	Identify the components of smart grid.	2	K3	CO2
4.	What is smart transmission system?	2	K1	CO2
5.	What do you understand by Advanced Metering infrastructure?	2	K1	CO3
6.	Distinguish smart meters from conventional energy meter?	2	K4	CO3
7.	Identify the significance of cellular network in smart grid.	2	K3	CO4
8.	Infer the advantages of optical fiber communication.	2	K2	CO4
9.	What do you mean by power quality?	2	K1	CO5
10.	Infer the issues involved in power quality?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. What are the drivers for the smart grid?	5	K1	CO1
	ii. Explain the special functions of a smart grid.	8	K2	

(OR)

b)	i.	Distinguish Smart grid from Conventional grid.	5	K4	CO1
	ii.	Explain National and International initiatives for developing Smart Grid.	8	K2	
12.	a)	Infer the functionalities of the following		K2	CO2
	i.	Intelligent Electronic Devices (IED)	7		
	ii.	Geographic Information System (GIS)	6		
(OR)					
b)	i.	Interpret the significance of Wide Area Monitoring, Protection and Control (WAMPAC) in smart grid.	5	K2	CO2
	ii.	Illustrate and explain the Architecture of Smart Grid.	8	K2	
13.	a)	Explain about Advanced Metering Infrastructure (AMI) Protocols and standards.	13	K2	CO3
(OR)					
b)	i.	Explain the operation of Phasor Measurement Unit (PMU) with a neat block diagram.	8	K2	CO3
	ii.	Identify the need of AMI in smart grid.	5	K3	
14.	a)	Explain the architecture and operation of Home area network and Wide Area network.	13	K2	CO4
(OR)					
b)	i.	Identify any three communication network standards in smart grid and explain them.	8	K3	CO4
	ii.	Explain about wireless sensor network with necessary diagram.	5	K2	
15.	a)	Analyze power quality issues of grid connected renewable energy sources.	13	K4	CO5
(OR)					
b)	i.	Explain about Web based power quality monitoring system.	7	K3	CO5
	ii.	Infer the significance of power quality audit.	6	K2	

### PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16.	a) Explain in detail the various Power Quality Conditioners employed in smart grid.	15	K2	CO5
(OR)				
b)	i. Analyze the opportunities and challenges in deploying smart grid.	10	K4	CO3
	ii. Explain the operation of Wi-Max network in smart grid.	5	K2	