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Question Paper Code	12556
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Eighth Semester

Electrical and Electronics Engineering

20EEEL802 – SMART GRID TECHNOLOGIES

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. What is the role of cyber security in smart grid?	2	K1	CO1
2. List the enabling technologies for the smart grid.	2	K1	CO1
3. What is substation automation?	2	K1	CO2
4. Classify the different types of HVDC configurations in the power system.	2	K2	CO2
5. What is role of PHEV in smart grid?	2	K1	CO3
6. Define the outage management.	2	K1	CO3
7. What is role of PMU in smart grid?	2	K1	CO4
8. Classify the building blocks of AMI in the smart grid.	2	K2	CO4
9. What are the benefits of WAN?	2	K1	CO5
10. What is LAN?	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) i) Compare conventional grid and smart grid.	7	K2	CO1
ii) Explain in detail about the architecture of the smart grid.	6	K2	CO1
OR			
b) i) Discuss about the challenges and benefits of smart grid technology.	7	K2	CO1
ii) Explain the stages on evolution of smart grid.	6	K2	CO1
12. a) Explain about the EMS in smart grid with necessary diagrams.	13	K2	CO2
OR			
b) Compare FACTS and HVDC.	13	K2	CO2
13. a) Explain about on phase shifting transformers with necessary diagrams.	13	K2	CO3
OR			
b) Describe in detail about Volt/VAr control equipments that are used in the distribution feeders of power system.	13	K2	CO3

14. a) Explain the concept of Phasor Measurement Unit (PMU) and Phasor Data Concentrator (PDC) with block diagrams. 13 K2 CO4

OR

b) Explain how the reliability of smart grid is enhanced by integrating Intelligent Electronic Devices (IED) into it. 13 K2 CO4

15. a) Compare LAN and WAN. 13 K2 CO5

OR

b) Explain about networking fundamentals and cyber security functions for smart grid with necessary diagrams. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Explain about national and international initiatives in smart grid and road map for Smart grid in India. 15 K2 CO1

OR

b) i) Explain in detail about requirements of self-healing grid. 8 K2 CO1

ii) What are the main features of smart grid? 7 K2 CO1