

2124

M.E. Electrical Engineering (Power System)

First Semester

EE(PS)-8104: Smart Grid Technologies

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt any five questions.

x-x-x

1. What are the various Communication Technologies that can be used in Smart Grid? Also mention their advantages and disadvantages. (10)
2. Examine the concept of E-business in the electricity retail market from a business-to-consumer (B2C) perspective. (10)
3. How do Distributed Generation Technologies, such as solar photovoltaics and micro-turbines, enhance the resilience and efficiency of smart grids? Illustrate their applications with examples and examine the challenges involved in their integration. (10)
4. Explore the role of Big Data Analytics in enhancing energy distribution and management within the Smart Grid framework. (10)
5. Examine the significance of real-time simulation in optimizing smart grid operations, emphasizing five key benefits it provides in improving the efficiency and reliability of smart grid systems. (10)
6. Analyze the roles of PMU and SCADA in modern power systems, comparing and contrasting their functionalities while highlighting their contributions to system monitoring, control, and reliability. (10)
7. What are the essential components of Advanced Metering Infrastructure (AMI), and how does AMI contribute to the functionality of a Smart Grid? (10)
8. Describe the role of Intelligent Centralized Control Systems (ICCS) in enhancing energy distribution efficiency within the Smart Grid framework. (10)

x-x-x