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Total Number of Pages: 01

B.Tech
REL7D003

7th Semester Regular/Back Examination 2024-25

SMART GRID

CSE, EEE, EE, ELECTRICAL & CE, IT

Max Marks: 100

Time: 3 Hours

Q.CODE : R208

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right-hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- What is a smart grid?
- What are Intelligent Electronic Devices (IED)s? Briefly explain about its importance.
- Briefly explain the importance of GIS in smart grid applications.
- What is distributed generation? Briefly explain.
- Name two storage systems used in Smart Grid.
- Distinguish between Distributed Generation and Conventional Generation.
- State the basic difference between a grid connected microgrid and isolated microgrid.
- What is a Fuel-cell? Briefly Explain.
- What is Plug-in Hybrid Electric Vehicle? Briefly explain.
- What is Power Quality Audit? Briefly Explain.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Write the various opportunities and challenges of smart grid.
- Explain about Wide Area Measurement System (WAMS).
- Explain the working of a smart meter using its Functional Block Diagram.
- What is Real Time Pricing? State its importance in smart grid.
- Explain details about feeder automation in smart grid.
- Explain about features of smart meters.
- Explain the various functions of substation automation system.
- Explain the importance FACTS devices in Smart Grid.
- What is the principle of operation of Compressed Air Energy Storage. Explain with neat diagrams.
- What are the advantages and disadvantages of Distributed Generation?
- Explain the different storage system used in smart grid.
- Write a short note on smart home management system.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3** Discuss about architecture and functions of Smart Grid. Compare a Smart Grid power system with traditional power system. **(10+6)**
- Q4** How is a Micro Grid functionally different from a Smart Grid? Explain about protection and control of micro-grid. **(6+10)**
- Q5** Explain the fundamentals of phasor measurement unit and their applications in power systems. How is PMU different from SCADA? **(10+6)**
- Q6** Explain the importance of power quality in smart grid and about Power Quality Conditioners for micro-grid. Explain Web based Power Quality monitoring. **(4+6+6)**