

Registration No.:

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

B.Tec
REL7D00

Total Number of Pages: 01

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 1)**
- a) What is a smart grid?
 - b) What are Intelligent Electronic Devices (IED)s? Briefly explain about its importance.
 - c) Briefly explain the importance of GIS in smart grid applications.
 - d) What is distributed generation? Briefly explain.
 - e) Name two storage systems used in Smart Grid.
 - f) Distinguish between Distributed Generation and Conventional Generation.
 - g) State the basic difference between a grid connected microgrid and isolated microgrid.
 - h) What is a Fuel-cell? Briefly Explain.
 - i) What is Plug-in Hybrid Electric Vehicle? Briefly explain.
 - j) 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)**
- a) Write the various opportunities and challenges of smart grid.
 - b) Explain about Wide Area Measurement System (WAMS).
 - c) Explain the working of a smart meter using its Functional Block Diagram.
 - d) What is Real Time Pricing? State its importance in smart grid.
 - e) Explain details about feeder automation in smart grid.
 - f) Explain about features of smart meters.
 - g) Explain the various functions of substation automation system.
 - h) Explain the importance FACTS devices in Smart Grid.
 - i) What is the principle of operation of Compressed Air Energy Storage. Explain with neat diagrams.
 - j) What are the advantages and disadvantages of Distributed Generation?
 - k) Explain the different storage system used in smart grid.
 - l) 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+10)**