

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3170922

Date:19-11-2024

Subject Name: Smart Grids

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|--|-----------|
| Q.1 | (a) Overall view on Smart Grid Vs Conventional Grid. | 03 |
| | (b) Draw the functional Block Diagram of Smart metering. | 04 |
| | (c) Discuss: The Indian scenario and updates for implementing the smart Grid setup. | 07 |
| Q.2 | (a) List the Challenges to implement of Smart Grid setup. | 03 |
| | (b) Describe the advantage and disadvantage of distributed generations | 04 |
| | (c) Draw and Explain in Brief: Generalized smart grid architecture. | 07 |
| | OR | |
| | (c) Give the Definition of Smart grid. What are the necessities of smart grid in existing electric power system network? | 07 |
| Q.3 | (a) Write short technical note about Unit commitment. | 03 |
| | (b) Discuss the electric vehicle to grid system in detail. | 04 |
| | (c) Explain the role of ZigBee in smart grid? | 07 |
| | OR | |
| Q.3 | (a) Explain Energy management system (EMS) in detail. | 03 |
| | (b) List the technical features of Bluetooth technology. | 04 |
| | (c) Compare the micro grid and smart grid. | 07 |
| Q.4 | (a) List the advantage and disadvantage of distributed generations. | 03 |
| | (b) Explain SCADA system and their limitations | 04 |
| | (c) Explain the concept of wide area monitoring system (WAMS) | 07 |
| | OR | |
| Q.4 | (a) Discuss in brief: Automatic meter reading | 03 |
| | (b) What is islanding? Explain the need and benefits of islanding. | 04 |
| | (c) List the barriers to utilize the distributed generation? How to overcome it? | 07 |
| Q.5 | (a) Explain the operational feature of phasor management Unit (PMU). | 03 |
| | (b) The role of load dispatch centers in smart grid operations: Discuss | 04 |
| | (c) What are the challenges of demand side management of smart grid | 07 |
| | OR | |
| Q.5 | (a) List the basic components of PMU | 03 |
| | (b) Classify time based tariff . | 04 |
| | (c) Explain the Role of cyber security for smart grid operations | 07 |
