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B.TECH
(SEM VIII) THEORY EXAMINATION 2022-23
INTRODUCTION TO SMART GRID

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.**2 x 10 = 20**

- (a) Give the definition of smart grid.
- (b) Define the term self-healing system.
- (c) What is smart meter?
- (d) What are the types of plug in hybrid vehicle?
- (e) What do you mean by feeder automation?
- (f) What are the advantages of automation system in power industries?
- (g) Why do we need microgrids?
- (h) Give some application of microgrid.
- (i) Interpret the term Power Quality in the smart grid.
- (j) What are the types of Power Quality Conditioners?

SECTION B

2. Attempt any three of the following:**10x3=30**

- (a) Discuss about the concept smart grid and need of smart grid.
- (b) Explain the Outage Management System (OMS) with help of block diagram
- (c) Explain the concept of phase measuring unit (PMU) with neat block diagram.
- (d) Define protection and control methods of micro grid in detail.
- (e) With the help of block diagram explain Unified Power Quality conditioner (UPQC).

SECTION C

3. Attempt any one part of the following:**10x1=10**

- (a) Explain the concept of Resilient & Self-Healing Grid with suitable example.
- (b) Explain the function of smart grid and Compare the difference between Conventional Grid and Smart Grid.

4. Attempt any one part of the following:**10x1=10**

- (a) Explain the concept of smart metering in Smart Grid and advantages of it.
- (b) Discuss in detail about the Smart Sensors and Home and Building Automation.

5. Attempt any *one* part of the following:

10x1=10

- (a) Discuss briefly about Intelligent Electronic Devices (IED) and their application for monitoring & protection.
- (b) Explain the block diagram of smart substation and Features of the Smart Station.

6. Attempt any *one* part of the following:

10x1=10

- (a) Write the short notes on :-
 - (i) Plastic & Organic solar cells
 - (ii) Variable speed wind generators
- (b) Explain briefly about the formation of micro-grid and Issues of interconnection.

7. Attempt any *one* part of the following:

10x1=10

- (a) Discuss briefly about Power Quality issues of Grid connected Renewable Energy Sources
- (b) Explain the concept of Web based Power Quality monitoring in detail.

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