



Paper ID : 260681

Printed Page: 1

Subject Code:BOE085

Roll No:

BTECH

(SEM. VIII) THEORY EXAMINATION 2025-26

INTRODUCTION TO SMART GRID

TIME: 3 HRS

M.MARKS: 70

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief.

02 x 7 = 14

Q no.	Question	CO	Level
a.	Define Smart Grid and state two key features distinguishing it from the conventional grid.	1	K2
b.	What is Real-Time Pricing in smart grid? Mention its advantages.	2	K2
c.	Define Intelligent Electronic Devices (IEDs) and state their role.	3	K2
d.	What is a microgrid? Mention any two applications.	4	K2
e.	Define power quality in smart grid environment.	5	K1
f.	What is Vehicle-to-Grid (V2G) concept?	2	K2
g.	State two functions of Wide Area Measurement System (WAMS).	3	K2

SECTION B

2. Attempt any *three* of the following:

07 x 3 = 21

Q no.	Question	CO	Level
a.	Explain the evolution of electric grid and justify the need for Smart Grid.	1	K2
b.	Discuss the working of smart meters and their role in demand-side management.	2	K3
c.	Explain the concept of Phasor Measurement Units (PMU) and their applications in monitoring and control.	3	K3
d.	Describe the formation and operational challenges of microgrids.	4	K4
e.	Explain different power quality issues arising due to integration of renewable energy sources.	5	K3

SECTION C

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

07 x 1 = 07

Q no.	Question	CO	Level
a.	Discuss the concept of resilient and self-healing smart grid with suitable examples.	1	K3
b.	Analyze the opportunities and barriers in implementation of Smart Grid technologies.	1	K4

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

07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain Automatic Meter Reading (AMR) and its advantages over traditional metering systems.	2	K3
b.	Discuss the role of smart appliances and home automation in energy management.	2	K3



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5. Attempt any one part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain substation automation and its significance in Smart Grid.	3	K3
b.	Discuss various energy storage technologies used in Smart Grid applications.	3	K4

6. Attempt any one part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain the integration of renewable energy sources in microgrid	4	K3
b.	Discuss different distributed energy resources and their impact on grid operation.	4	K4

7. Attempt any one part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain the concept of power quality conditioners in Smart Grid.	5	K3
b.	Discuss web-based power quality monitoring techniques in Smart Grid.	5	K4