Paper ID : 250255

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VIII) THEORY EXAMINATION 2024-25
INTRODUCTION TO SMART GRID

TIME: 3 HRS **M.MARKS: 100**

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

SECTION A

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

Q No.	Question	CO	Level
a.	Enumerate five functions of smart grid.	1	K2
b.	What is the need of smart grid?	1	K2
c.	What is outage management system?	2	K1
d.	Differentiate between conventional sensors and smart sensors.	2	K2
e.	What is Phasor Measurement Unit (PMU)?	3	K2
f.	Enumerate two Intelligent Electronic Devices.	3	K2
g.	Explain the concept of a microturbine.	4	K2
h.	Explain the need and benefits of microgrid.	4	K2
i.	Define harmonics.	5	K1
j.	Explain the concept of power quality conditioner.	5	K2

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

Q No.	Question	CO	Level
a.	Explain the opportunities & barriers of Smart Grid.	1	K2
b.	Explain the concept of Automatic Meter Reading (AMR). Elaborate the difference between conventional metering and AMR.	2	K2
c.	What is Geographic Information System (GIS)? Explain role of GIS in smart grid.	3	K2
d.	Explain the formation of microgrid. Analyze the effect of microgrid in conventional power grid.	4	K4
e.	Explain the concept of web-based Power Quality monitoring in brief.	5	K2

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain the working of resilient smart grid and self healing smart grid.	1	K2
b.	Discuss the role of CDM opportunities in carbon credit enhancement of a country.	1	K4

4. Attempt any *one* part of the following: **10 x 1 = 10**

Q No.	Question	CO	Level
a.	Explain the concept of plug-in Hybrid Electric Vehicles with a suitable diagram.	2	K2
b.	Explain the benefits of vehicle-to-grid technology in the smart grid.	2	K2

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5. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain the concept of Compressed Air Energy Storage with suitable diagram.	3	K2
b.	Explain the following: (a) Feeder Automation (b) Substation Automation	3	K2

6. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain different types of solar cells and their application areas.	4	K4
b.	Explain the limitations of microgrid and distributed energy resources.	4	K2

7. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Discuss the role of power quality monitoring in smart grid.	5	K2
b.	Explain the power quality issues of integrating solar power plants in the smart grid.	5	K4