

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170922****Date:17/12/2021****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) What is Smart Grid? Describe the importance of Smart Grid	<b>03</b>
	(b) Compare the smart grid and conventional grid system	<b>04</b>
	(c) Discuss the initiative taken for smart grid system in India.	<b>07</b>
<b>Q.2</b>	(a) Describe functional block diagram of a smart metering	<b>03</b>
	(b) Describe the advantage and disadvantage of distributed generations	<b>04</b>
	(c) Explain Energy management system (EMS) in detail.	<b>07</b>
<b>OR</b>		
	(c) Discuss the challenges for electric vehicle in India. Also Explain electric vehicle to grid system in detail.	<b>07</b>
<b>Q.3</b>	(a) List out the types of communication system for smart grid	<b>03</b>
	(b) Compare the micro grid and smart grid.	<b>04</b>
	(c) State and explain the issues of interconnecting the micro grid with the utility grid.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain the SCADA system and their limitations	<b>03</b>
	(b) Explain Energy management system (EMS) in detail	<b>04</b>
	(c) Explain the operational feature of phasor management Unit(PMU)	<b>07</b>
<b>Q.4</b>	(a) What is islanding? Explain the need and benefits of islanding	<b>03</b>
	(b) Explain the integration process for distributed generations to power grid	<b>04</b>
	(c) Explain the concept of wide area monitoring system (WAMS)	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Explain in brief: Automatic meter reading	<b>03</b>
	(b) Describe the role of load dispatch centers in smart grid operations	<b>04</b>
	(c) Explain the operational feature of fault detection and self-healing system	<b>07</b>
<b>Q.5</b>	(a) Explain the concept of islanding and its importance	<b>03</b>
	(b) What are the challenges of demand side management of smart grid.	<b>04</b>
	(c) Discuss the necessity of micro grid and their applications in detail	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Describe the Unit Commitment in brief	<b>03</b>
	(b) Explain the necessity of cyber security for smart grid operations	<b>04</b>
	(c) Explain Wi-Max based communication and wireless mesh network	<b>07</b>

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