

U.S.N.

# B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

## July 2023 Semester End Main Examinations

**Programme: B.E.**

**Branch: Institutional Elective**

**Course Code: 19EE8OE3SG**

**Course: Smart Grid Technologies**

**Semester: VIII**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 06.07.2023**

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any, may be suitably assumed.

<b>Important Note:</b> Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.			<b>UNIT - I</b>	<b>CO</b>	<b>PO</b>	<b>Marks</b>
	1	a)	Discuss the benefits and challenges of smart grid.	CO1	PO1	08
		b)	Illustrate the smart grid technology framework and explain its functions.	CO1	PO1	08
		c)	Compare conventional grid and smart grid.	CO1	PO1	04
			<b>UNIT - II</b>			
	2	a)	Draw the architecture of SCADA system and explain its functions.	CO1	PO1	10
		b)	Describe the integration of WAMS and EMS for enhanced grid security assessment.	CO1	PO1	10
			<b>UNIT - III</b>			
	3	a)	Define Advanced Metering Infrastructure (AMI) and list out its main features.	CO2	PO6	08
		b)	Explain the demand side management in smart grid.	CO2	PO6	08
		c)	Discuss i) Real time pricing, ii) Peak time pricing	CO2	PO6	04
			<b>OR</b>			
	4	a)	Describe the penetration and variability issues associated with sustainable energy technology.	CO2	PO6	06
		b)	Compare super capacitor and flywheel storage technologies	CO2	PO6	06
		c)	Discuss the parameters used for selection of proper storage technology for smart grid.	CO2	PO6	08
			<b>UNIT - IV</b>			
	5	a)	Illustrate the schematic of solar power technology and explain its operation.	CO2	PO7	10
		b)	Explain the principle and operation of small and micro hydro power with a neat diagram.	CO2	PO7	10

		<b>UNIT - V</b>			
6	a)	Illustrate the schematic of local area network and explain its features.	<i>C03</i>	<i>P07</i>	<b>08</b>
	b)	Explain the architecture of wide area network with neat diagram.	<i>C03</i>	<i>P07</i>	<b>08</b>
	c)	Discuss the role of IP based protocols in smart grid.	<i>C03</i>	<i>P07</i>	<b>04</b>
		<b>OR</b>			
7	a)	Explain the risks and mitigation approach to cyber security in smart grid.	<i>C03</i>	<i>P07</i>	<b>10</b>
	b)	Discuss the role and functions of cloud computing in smart grid.	<i>C03</i>	<i>P07</i>	<b>10</b>

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B.M.S.C.E. - EVEN SEM 2022-23