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

**Important Note:** 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 - V</b>					
6	a)	Illustrate the schematic of local area network and explain its features.	CO3	PO7	<b>08</b>
	b)	Explain the architecture of wide area network with neat diagram.	CO3	PO7	<b>08</b>
	c)	Discuss the role of IP based protocols in smart grid.	CO3	PO7	<b>04</b>
<b>OR</b>					
7	a)	Explain the risks and mitigation approach to cyber security in smart grid.	CO3	PO7	<b>10</b>
	b)	Discuss the role and functions of cloud computing in smart grid.	CO3	PO7	<b>10</b>

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