Register Number:……..

KUMARAGURU
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B.E. DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U18EEE0007: SMART GRID ENGINEERING

COURSE OUTCOMES

CO1: Understand the fundamental elements of the smart grid.
CO2: Understand the importance of information and communication technologies of the smart grid.
CO3: Understand various sensing and measurement technologies involved with the smart grid.
CO4: Illustrate the concepts of control and automation techniques in smart grid.
CO5: Understand the role of power electronics in smart grid and to classify the different energy storage techniques.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Outline the goals needed to achieve the perfect power system.	CO1	[K_2]
2.	Summarize any two sensing, measurement, control and automation technologies used in smart grid.	CO1	[K_2]
3.	Comment on SNR.	CO2	[K_2]
4.	Show the Open System Interconnection model developed by the International Standard Organization.	CO2	[K_2]
5.	List the key components employed in smart metering.	CO3	[K_2]
6.	Comment on synchrophasor technology.	CO3	[K_2]
7.	Compare meter IED and Recording IED.	CO4	[K_2]
8.	Show the main components of distribution management system.	CO4	[K_2]
9.	Compare PEM and AFC.	CO5	[K_3]
10.	State the importance of power quality.	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Enumerate the smart grid initiatives with relevant diagram.	16	CO1	[K_2]
12.	a)	Demonstrate the communication channels used in smart gird system to transmit data from one point to another points. Also comment on the parameters used to		CO2	[K_2]

describe these channels.

13.	a)	Explain in detail communications infrastructure and protocols for smart metering with relevant diagrams.	CO3	[K_2]
14.	a)	Illustrate the configuration of a modern substation automation system.	CO4	[K_2]
15.	a)	Demonstrate the various energy storage technologies and compare the power and energy outputs of electricity storage schemes. Also mention the applications of energy storage.	CO5	[K_3]
16.	a)	Explain the following i) D-STATCOM ii) Series Compensation Also compare shunt and load compensations techniques.	CO5	[K_3]

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