SRM VALLIAMMAI ENGINEERING COLLEGE

(Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF

ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

VIII SEMESTER

1905810 SMART GRID

Regulation – 2019

Academic Year 2025-2026 EVEN

Prepared by

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SUBJECT & SUBJECT CODE: 1905810 SMART GRID SEM / YEAR: VIII / IV

UNIT-I INTRODUCTION TO SMART GRID				
Evolution of Electric Grid, Concept, Definitions and Need for Smart Grid, Smart grid drivers, functions, opportunities, challenges and benefits, Difference between conventional & Smart Grid, National and International Initiatives in Smart Grid. Power Distribution utility in India, IEEE communication surveys.				
PART-A				
Q. No	**Questions**	**BT Level**	**Competence**	**CO**
1.	Define electrical grid.	BTL1	Remembering	CO1
2.	What is meant by smart grid?	BTL2	Understanding	CO1
3.	Compare traditional grid with smart grid.	BTL1	Remembering	CO1
4.	What are smart grid drivers?	BTL2	Understanding	CO1
5.	What are global drivers of smart grid driver?	BTL1	Remembering	CO1
6.	State the need of improving smart grid awareness.	BTL2	Understanding	CO1
7.	List out the benefits of smart grid.	BTL1	Remembering	CO1
8.	Define dynamic capability rating.	BTL2	Understanding	CO1
9.	In what way smart meter implementation will improve smart grid efficiency?	BTL1	Remembering	CO1
10.	Give the various domains of smart grid.	BTL2	Understanding	CO1
11.	What are the needs for smart grid?	BTL1	Remembering	CO1
12.	What are the four components of electric grid?	BTL2	Understanding	CO1
13.	Why smart grid is highly essential?	BTL1	Remembering	CO1
14.	What are the key features of smart grid?	BTL2	Understanding	CO1
15.	What are the key characteristics of smart grid?	BTL1	Remembering	CO1
16.	Name few technologies that enable smart grid deployment.	BTL2	Understanding	CO1
17.	Name environmental improvements attained through smart grids.	BTL1	Remembering	CO1
18.	What are challenges of smart grid implementation?	BTL2	Understanding	CO1
19.	Recall the meaning of an electrical grid.	BTL1	Remembering	CO1
20.	Define what a smart grid is.	BTL2	Understanding	CO1

21.	List the major drivers of a smart grid.		BTL1	Remembering	CO1
22.	Identify the global drivers influencing smart grid adoption.		BTL2	Understanding	CO1
23.	Compare a traditional grid with a smart grid.		BTL1	Remembering	CO1
24.	Clarify the need for improving smart grid awareness.		BTL2	Understanding	CO1
	PART-B				
1.	Apply the conceptual model of a smart grid to illustrate its working with a suitable diagram.	(13)	BTL3	Applying	CO1
2.	Analyze the methods and challenges associated with integrating renewable energy into a smart grid.	(13)	BTL4	Analyzing	CO1
3.	Demonstrate the need for smart grid adoption through a real-time application example.	(13)	BTL3	Applying	CO1
4.	Examine how automation technologies impact the performance and reliability of smart grid systems.	(13)	BTL4	Analyzing	CO1
5.	Use the definition of a smart grid to relate and describe the functions it performs in modern power systems.	(13)	BTL3	Applying	CO1
6.	Analyze the drawbacks of traditional electrical grids and justify the move toward smart grids.	(13)	BTL4	Analyzing	CO1
7.	Summarize how smart grid drivers influence India's power sector with appropriate examples.	(13)	BTL3	Applying	CO1
8.	Compare and analyze the features of smart grids with conventional grids to identify major differences.	(13)	BTL4	Analyzing	CO1
9.	Apply your understanding to identify challenges faced during smart grid deployment.	(13)	BTL3	Applying	CO1
10.	Analyze the benefits of smart grids in terms of operational, economic, and environmental impacts.	(13)	BTL4	Analyzing	CO1
11.	Enumerate and relate the benefits of smart grids to practical power system improvements.	(13)	BTL3	Applying	CO1
12.	Examine the key challenges of smart grid development by analyzing implementation issues.	(13)	BTL4	Analyzing	CO1
13.	Outline the key features of smart grids and apply comparison with conventional grids to highlight improvements.	(13)	BTL3	Applying	CO1
14.	Analyze the influence of smart grid drivers on	(13)	BTL4	Analyzing	CO1

	India's energy landscape.				
15.	Use the concept of an electrical grid to justify the transition toward smart grid systems.	(13)	BTL3	Applying	CO1
16.	Break down the definition of a smart grid and analyze the major functions it performs.	(13)	BTL4	Analyzing	CO1
17.	Critically analyze the factors that create the need for smart grid modernization.	(13)	BTL3	Applying	CO1
PART-C					
1.	Evaluate various automation concepts and justify their significance in enhancing smart grid implementation.	(15)	BTL5	Evaluating	CO1
2.	Critically assess the different methods of integrating renewable energy sources into a smart grid and defend the most effective approach	(15)	BTL5	Evaluating	CO1
3.	Design a conceptual smart grid model by creating a detailed diagram and propose how its components can be optimized for maximum effectiveness.	(15)	BTL6	Creating	CO1
4.	Develop a new strategy for integrating renewable energy sources into a smart grid and justify why your proposed method can achieve the highest efficiency.	(15)	BTL6	Creating	CO1
5.	Analyze the conceptual framework of a smart grid and examine how effectively its major components function, using a suitable diagram for support.	(15)	BTL4	Analyzing	CO1

UNIT-II SMART GRID TECHNOLOGIES

Technology Drivers, Smart energy resources, Smart substations, Substation Automation, Feeder Automation, Transmission systems: EMS, FACTS and HVDC, Wide area monitoring, Protection and control, Distribution systems: DMS, Volt/VAR control, Fault Detection, Isolation and service restoration, Outage management, High-Efficiency Distribution, Transformers, Phase Shifting Transformers, Plug-in Hybrid Electric Vehicles(PHEV).

PART-A

Q. No	Questions	BT Level	Competence	CO
1.	Name the technology drivers that build the smart grid.	BTL1	Remembering	CO2
2.	What is Information and communications technology driver?	BTL2	Understanding	CO2
3.	What is sensing, measurement, control and automation	BTL1	Remembering	CO2

	technology driver?				
4.	List out some of the FACTS devices.		BTL2	Understanding	CO2
5.	What is Energy Management System (EMS)?		BTL1	Remembering	CO2
6.	List out the categories of DSM.		BTL2	Understanding	CO2
7.	What are the constraints of DSM?		BTL1	Remembering	CO2
8.	Define Smart energy resource.		BTL2	Understanding	CO2
9.	List out the types of smart energy resources.		BTL1	Remembering	CO2
10.	State the advantages of renewable energy sources.		BTL2	Understanding	CO2
11.	What is solar PV generation?		BTL1	Remembering	CO2
12.	What is solar thermal energy?		BTL2	Understanding	CO2
13.	How biomass energy is harnessed?		BTL1	Remembering	CO2
14.	What is hydro power production?		BTL2	Understanding	CO2
15.	What is fuel cell?		BTL1	Remembering	CO2
16.	How tidal power is harnessed?		BTL2	Understanding	CO2
17.	State the general functions of a substation.		BTL1	Remembering	CO2
18.	What the challenges faced by substation designer when advanced technologies are used?		BTL2	Understanding	CO2
19.	Classify substation based on their types.		BTL1	Remembering	CO2
20.	List out the types of HVDC links.		BTL2	Understanding	CO2
21.	Name the features of smart substation.		BTL1	Remembering	CO2
22.	What is IED?		BTL2	Understanding	CO2
23.	Illustrate Energy Management System (EMS).		BTL1	Remembering	CO2
24.	What is RTU?		BTL2	Understanding	CO2
	PART-B				
1.	Apply your understanding to categorize the different smart grid technology drivers.	(13)	BTL3	Applying	CO2
2.	Examine the different distribution system topologies and analyze their suitability for smart grid applications, using neat diagrams.	(13)	BTL4	Analyzing	CO2
3.	Demonstrate the concept of Demand-Side Management (DSM) with a suitable example.	(13)	BTL3	Applying	CO2
4.	Analyze HVDC system components and interpret their working with the help of a neat diagram.	(13)	BTL4	Analyzing	CO2
5.	Use your knowledge to describe smart energy sources and relate their role in smart grid operation.	(13)	BTL3	Applying	CO2
6.	Evaluate various FACTS devices by analyzing their functions in smart grids with supporting diagrams.	(13)	BTL4	Analyzing	CO2

7.	Apply the working principle of a smart substation and illustrate its operation using a neat diagram.	(13)	BTL3	Applying	CO2
8.	Analyze the functional blocks of an energy management system (EMS) and interpret its operation using a neat diagram.	(13)	BTL4	Analyzing	CO2
9.	Illustrate how substation automation is implemented in a smart grid environment.	(13)	BTL3	Applying	CO2
10.	Examine feeder automation techniques and analyze how they enhance distribution network efficiency.	(13)	BTL4	Analyzing	CO2
11.	Enumerate the steps involved in feeder automation through a practical scenario.	(13)	BTL3	Applying	CO2
12.	Break down the components of substation automation and analyze how they improve grid performance.	(13)	BTL4	Analyzing	CO2
13.	Apply the concept of energy management systems (EMS) and illustrate their operation with a neat diagram.	(13)	BTL3	Applying	CO2
14.	Analyze the operational structure of a smart substation and interpret its functioning with a neat diagram.	(13)	BTL4	Analyzing	CO2
15.	Use appropriate diagrams to demonstrate the application of various FACTS devices in smart grids.	(13)	BTL3	Applying	CO2
16.	Examine the role of various smart energy sources and analyze how they support smart grid operation.	(13)	BTL4	Analyzing	CO2
17.	Apply the basic principles of HVDC and illustrate its system configuration using a neat diagram.	(13)	BTL3	Applying	CO2
PART-C					
1.	Critically evaluate the role of an Outage Management System (OMS) and justify its effectiveness in improving distribution system reliability.	(15)	BTL5	Evaluating	CO2
2.	Assess the performance of high-efficiency distribution transformers and justify their significance in enhancing energy efficiency and reducing losses.	(15)	BTL5	Evaluating	CO2

3.	Design an improved configuration for phase-shifting transformers and propose how your model can enhance power flow control in modern grids.	(15)	BTL6	Creating	CO2
4.	Develop an advanced operational concept for plug-in hybrid electric vehicles (PHEVs) and justify how your proposed design can improve energy efficiency and grid interaction.	(15)	BTL6	Creating	CO2
5.	Analyze the key components and operational steps involved in feeder automation, highlighting how each element contributes to improved distribution performance.	(15)	BTL4	Analyzing	CO2

UNIT-III SMART METERS AND ADVANCED METERING INFRASTRUCTURE

Introduction to Smart Meters, Advanced Metering infrastructure(AMI) drivers and benefits, AMI protocols, standards and initiatives, AMI needs in the smart grid, Phasor Measurement Unit(PMU), Intelligent Electronic Devices(IED)& their application for monitoring & protection

PART-A

Q. No	Questions	BT Level	Competence	CO
1.	What is accumulation meter	BTL1	Remembering	CO3
2.	Why billing timing is high in an accumulation meter?	BTL2	Understanding	CO3
3.	Compare conventional and smart meter.	BTL1	Remembering	CO3
4.	List the functions of smart meter.	BTL2	Understanding	CO3
5.	What is smart metering system?	BTL1	Remembering	CO3
6.	Highlight the impact of ICT in smart metering infrastructure.	BTL2	Understanding	CO3
7.	State the various functions performed by smart metering infrastructure.	BTL1	Remembering	CO3
8.	What is role of data concentrator?	BTL2	Understanding	CO3
9.	Why GIS is important in a smart grid?	BTL1	Remembering	CO3
10.	Name the various services operated by HAN infrastructure.	BTL2	Understanding	CO3
11.	How decision making process is initiated in a smart grid environment?	BTL1	Remembering	CO3
12.	Specify the essential components in a smart grid.	BTL2	Understanding	CO3
13.	What are the drawbacks of conventional meters in a grid?	BTL1	Remembering	CO3
14.	Classify the communication network in a smart grid.	BTL2	Understanding	CO3
15.	What is the need for HAN in a smart grid?	BTL1	Remembering	CO3

16.	What is NAN in a smart grid?		BTL2	Understanding	CO3
17.	List the components of AMI.		BTL1	Remembering	CO3
18.	What is AMI?		BTL2	Understanding	CO3
19.	Define interoperability.		BTL1	Remembering	CO3
20.	List the security related issues in a smart grid.		BTL2	Understanding	CO3
21.	Recall the purpose of a Home Area Network (HAN) in a smart grid.		BTL1	Remembering	CO3
22.	Explain the concept of a Neighborhood Area Network (NAN) in a smart grid.		BTL2	Understanding	CO3
23.	List the components included in an Advanced Metering Infrastructure (AMI).		BTL1	Remembering	CO3
24.	Interpret the term Advanced Metering Infrastructure (AMI) in your own words.		BTL2	Understanding	CO3
	PART-B				
1.	Apply your understanding to describe how utility metering operations contribute to effective grid management.	(13)	BTL3	Applying	CO3
2.	Analyze the need for smart monitoring systems and evaluate their impact on grid resilience and performance.	(13)	BTL4	Analyzing	CO3
3.	Illustrate the smart meter infrastructure using a neat sketch and apply the concept to show its working.	(13)	BTL3	Applying	CO3
4.	Examine the role of Intelligent Electronic Devices (IEDs) and analyze their contribution to smart grid automation.	(13)	BTL4	Analyzing	CO3
5.	Demonstrate the operation of a smart meter and relate it to its key functionalities.	(13)	BTL3	Applying	CO3
6.	Analyze the structure of a phasor measurement unit (PMU) and evaluate its role in grid monitoring.	(13)	BTL4	Analyzing	CO3
7.	Classify the different types of smart meter systems and provide relevant examples.	(13)	BTL3	Applying	CO3
8.	Analyze the major factors that drive AMI implementation within smart grid environments.	(13)	BTL4	Analyzing	CO3
9.	Apply your knowledge to outline the hardware architecture of a smart meter.	(13)	BTL3	Applying	CO3
10.	Examine the different AMI standards and analyze their importance in ensuring interoperability.	(13)	BTL4	Analyzing	CO3

11.	Summarize the benefits of AMI platforms by relating them to practical grid improvements.	(13)	BTL3	Applying	CO3
12.	Analyze the benefits of AMI platforms in terms of efficiency, reliability, and consumer engagement.	(13)	BTL4	Analyzing	CO3
13.	List the major AMI standards and apply them to explain their purpose in smart grid communication.	(13)	BTL3	Applying	CO3
14.	Analyze the hardware architecture of a smart meter and interpret how each component contributes to its operation.	(13)	BTL4	Analyzing	CO3
15.	Demonstrate the driving factors behind AMI adoption within a smart grid framework.	(13)	BTL3	Applying	CO3
16.	Break down and analyze the classification of various smart meter systems.	(13)	BTL4	Analyzing	CO3
17.	Apply the concept of a phasor measurement unit (PMU) to describe its structure and significance.	(13)	BTL3	Applying	CO3
PART-C					
1.	Critically evaluate the contribution of Intelligent Electronic Devices (IEDs) to smart grid operation and justify their effectiveness using suitable examples.	(15)	BTL5	Evaluating	CO3
2.	Assess the significance of smart monitoring systems and defend how they enhance overall grid reliability.	(15)	BTL5	Evaluating	CO3
3.	Design an improved utility metering operation model and propose how it can enhance overall grid performance.	(15)	BTL6	Creating	CO3
4.	Create a detailed smart meter infrastructure sketch and formulate a functional layout that optimizes its operational components.	(15)	BTL6	Creating	CO3
5.	Analyze the operation of a smart meter and evaluate how its functionalities support advanced grid management.	(15)	BTL4	Analyzing	CO3
UNIT-IV POWER QUALITY MANAGEMENT IN SMART GRID					
Power Quality & EMC in Smart Grid, Power Quality issues of Grid connected Renewable Energy Sources, Power Quality Conditioners for Smart Grid, Web based Power Quality monitoring, Power Quality Audit.					
PART-A					

Q. No	Questions		BT Level	Competence	CO
1.	Define the term power quality.		BTL1	Remembering	CO4
2.	Why there is a deviation of ideal condition in an electrical network?		BTL2	Understanding	CO4
3.	State the reason for severity condition observed at the utilization level.		BTL1	Remembering	CO4
4.	What are the reasons for deviation in power quality at consumer's end		BTL2	Understanding	CO4
5.	What is harmonics?		BTL1	Remembering	CO4
6.	Give few examples of linear loads.		BTL2	Understanding	CO4
7.	What is linear load?		BTL1	Remembering	CO4
8.	What is meant by non linear load?		BTL2	Understanding	CO4
9.	State few examples for non linear loads.		BTL1	Remembering	CO4
10.	Define THD.		BTL2	Understanding	CO4
11.	What is telephone influence factor ?		BTL1	Remembering	CO4
12.	Define total demand distortion.		BTL2	Understanding	CO4
13.	Classify the power quality problems.		BTL1	Remembering	CO4
14.	What is EMC?		BTL2	Understanding	CO4
15.	State the objective of EMC.		BTL1	Remembering	CO4
16.	List the power quality problems faced by consumers.		BTL2	Understanding	CO4
17.	Define flicker.		BTL1	Remembering	CO4
18.	What are CPDs?		BTL2	Understanding	CO4
19.	What is power quality audit?		BTL1	Remembering	CO4
20.	Define the term harmonics.		BTL2	Understanding	CO4
21.	Give your understanding of non-linear loads with suitable examples.		BTL1	Remembering	CO4
22.	List a few examples of linear loads.		BTL2	Understanding	CO4
23.	Describe what is meant by a non-linear load.		BTL1	Remembering	CO4
24.	State the meaning of a linear load.		BTL2	Understanding	CO4
	PART-B				
1.	Apply your understanding to highlight the effects caused by power quality issues in electrical systems.	(13)	BTL3	Applying	CO4
2.	Investigate different types of UPQC and analyze their effectiveness in controlling power quality issues.	(13)	BTL4	Analyzing	CO4
3.	Illustrate how different electrical loads depend on harmonics through suitable examples.	(13)	BTL3	Applying	CO4

4.	Analyze the stages involved in a power quality audit process and evaluate their importance.	(13)	BTL4	Analyzing	CO4
5.	Apply the concept of power quality to describe various power quality indices.	(13)	BTL3	Applying	CO4
6.	Examine different power quality monitoring methods and analyze their suitability for various applications.	(13)	BTL4	Analyzing	CO4
7.	Demonstrate the influence of harmonics on a distribution system with real-time scenarios.	(13)	BTL3	Applying	CO4
8.	Analyze the role of web-based power quality monitoring and evaluate its usefulness in modern grid management.	(13)	BTL4	Analyzing	CO4
9.	Use the definition of power quality to classify the major categories of power quality problems.	(13)	BTL3	Applying	CO4
10.	Interpret and analyze the power quality standards applicable to smart grids.	(13)	BTL4	Analyzing	CO4
11.	Apply the idea of power quality mitigation and outline the techniques used to reduce power quality problems.	(13)	BTL3	Applying	CO4
12.	Analyze the objective of EMC in smart grids and evaluate how it ensures compatibility among system components.	(13)	BTL4	Analyzing	CO4
13.	Demonstrate the objective of EMC (Electromagnetic Compatibility) within a smart grid environment.	(13)	BTL3	Applying	CO4
14.	Examine the concept of power quality mitigation and analyze the techniques used for resolving power quality issues.	(13)	BTL4	Analyzing	CO4
15.	Apply your understanding to interpret important power quality standards used in smart grids.	(13)	BTL3	Applying	CO4
16.	Analyze the concept of power quality and categorize major power quality problems based on system behavior.	(13)	BTL4	Analyzing	CO4
17.	Explain the role of web-based power quality monitoring by applying its use in smart grid operation.	(13)	BTL3	Applying	CO4
PART-C					
1.	Design an advanced power quality monitoring framework by combining various monitoring	(15)	BTL5	Evaluating	CO4

	types and propose how it can be applied effectively in real-world systems.				
2.	Create a comprehensive power quality audit model by integrating all audit stages and develop a procedure that can be implemented in actual power distribution networks.	(15)	BTL5	Evaluating	CO4
3.	Develop a new strategy for addressing power quality issues and propose a model that predicts and minimizes their impact on overall system performance.	(15)	BTL6	Creating	CO4
4.	Design an analytical framework to evaluate the dependency of electrical loads on harmonics and create a method to reduce the resulting distortions in practical systems.	(15)	BTL6	Creating	CO4
5.	Analyze various power quality indices and interpret their significance in evaluating system performance.	(15)	BTL4	Analyzing	CO4

UNIT-V HIGH PERFORMANCE COMPUTING FOR SMART GRID APPLICATIONS

Local Area Network(LAN),House Area Network(HAN), Wide Area Network(WAN), Broad band over Power line(BPL),IP based Protocols, Basics of Web Service and CLOUD Computing to make Smart Grids smarter, Cyber Security for Smart Grid.

PART-A

Q. No	Questions	BT Level	Competence	CO
1.	State the need for communication in smart grid.	BTL1	Remembering	CO5
2.	What is meant by quality of service?	BTL2	Understanding	CO5
3.	List the key features of communication technologies.	BTL1	Remembering	CO5
4.	Give the timing requirements for smart grid communication technologies.	BTL2	Understanding	CO5
5.	Why IP is used in smart grid communication?	BTL1	Remembering	CO5
6.	Highlight the merits of PLC in smart grid.	BTL2	Understanding	CO5
7.	List the merits of NB-PLC technologies.	BTL1	Remembering	CO5
8.	What are challenges of PLC?	BTL2	Understanding	CO5
9.	Classify optical fibers.	BTL1	Remembering	CO5
10.	What is WDWM?	BTL2	Understanding	CO5
11.	What is WRAN?	BTL1	Remembering	CO5
12.	What is the need for HEMS?	BTL2	Understanding	CO5
13.	What is WAN?	BTL1	Remembering	CO5
14.	What are the types of cloud computing architecture?	BTL2	Understanding	CO5

15.	Specify the challenges in using cloud computing for smart grids.		BTL1	Remembering	CO5
16.	What is integrity?		BTL2	Understanding	CO5
17.	State why IP is used in smart grid communication.		BTL1	Remembering	CO5
18.	Describe the need for implementing HEMS in modern smart homes.		BTL2	Understanding	CO5
19.	List the merits of Power Line Communication (PLC) in a smart grid.		BTL1	Remembering	CO5
20.	Explain the concept of WRAN in smart grid communication.		BTL2	Understanding	CO5
21.	List the advantages of NB-PLC technologies.		BTL1	Remembering	CO5
22.	Interpret the term WDM/WDM and describe its purpose.		BTL2	Understanding	CO5
23.	State the challenges associated with PLC.		BTL1	Remembering	CO5
24.	Summarize the key merits of NB-PLC technologies.		BTL2	Understanding	CO5
	PART-B				
1.	Discuss the communication requirements for smart grid.	(13)	BTL3	Applying	CO5
2.	Explain the features of smart grid communication technologies.	(13)	BTL4	Analyzing	CO5
3.	With a neat sketch, outline the architectural details of smart grid communication.	(13)	BTL3	Applying	CO5
4.	Infer the need for IP in smart grid communication system.	(13)	BTL4	Analyzing	CO5
5.	Outline the power line communication role in smart grid.	(13)	BTL3	Applying	CO5
6.	Classify PLC technologies.	(13)	BTL4	Analyzing	CO5
7.	Discuss the role of fiber optic communication in smart grid.	(13)	BTL3	Applying	CO5
8.	Outline the security issues in smart grid.	(13)	BTL4	Analyzing	CO5
9.	Infer the smart grid security objectives.	(13)	BTL3	Applying	CO5
10.	Discuss the cyber security requirements in smart grid.	(13)	BTL4	Analyzing	CO5
11.	Explain the network security threat found in smart grid.	(13)	BTL3	Applying	CO5
12.	Classify attack detection in power networks.	(13)	BTL4	Analyzing	CO5
13.	Explain the various layers in Denial-of-service attacks.	(13)	BTL3	Applying	CO5
14.	Apply your understanding to illustrate the	(13)	BTL4	Analyzing	CO5

	architectural layout of smart grid communication using a neat sketch.				
15.	Break down the role of power line communication (PLC) in smart grids and evaluate its contribution to overall communication performance.	(13)	BTL3	Applying	CO5
16.	Examine the necessity of IP within smart grid communication systems and analyze its advantages.	(13)	BTL4	Analyzing	CO5
17.	Demonstrate the need for IP-based communication in smart grid systems with suitable justification.	(13)	BTL3	Applying	CO5
	PART-C				
1.	Critically evaluate the communication requirements of a smart grid and justify their relevance for reliable operation.	(15)	BTL5	Evaluating	CO5
2.	Evaluate the cybersecurity requirements essential for smart grid protection and justify their necessity.	(15)	BTL5	Evaluating	CO5
3.	Assess the features of various smart grid communication technologies and defend which features contribute most to grid performance.	(15)	BTL6	Creating	CO5
4.	Develop a security model addressing major smart grid vulnerabilities and justify how it mitigates risks.	(15)	BTL6	Creating	CO5
5.	Examine the architectural structure of smart grid communication using a neat sketch and evaluate its effectiveness.	(15)	BTL4	Analyzing	CO5

Course Outcome:

- Learners will develop more understanding on the concepts of Smart Grid and its present developments.
- Learners will study about different Smart Grid technologies.
- Learners will acquire knowledge about different smart meters and advanced metering infrastructure.
- Learners will have knowledge on power quality management in Smart Grids
- Learners will develop more understanding on LAN, WAN and Cloud Computing for Smart Grid applications.