SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF

ELECTRICAL AND ELECTRONICS ENGINEERING

M.E (Power Systems Engineering)

QUESTION BANK

II SEMESTER

PS3263-ADVANCED POWER SYSTEM PROTECTION

Regulation – 2023

Academic Year 2024-2025 (Even)

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DEPARTMENT OF EEE

QUESTION BANK

SUBJECT : PS3263-ADVANCED POWER SYSTEM PROTECTION

SEM / YEAR: II / 2024-25(Even)

UNIT I- NUMERICAL PROTECTION				
Introduction - Block diagram of numerical relay - Sampling theorem - Correlation with a reference wave - Least Error Squared (LES) technique - Digital filtering and numerical over - Current Protection - Numerical transformer differential protection- Numerical distance protection of transmission line.				
PART - A				
Q.No	**Questions**	**BT Level**	**Competence**	**Course outcomes**
1.	What is the primary purpose of numerical protection in power systems?	BT-1	Remember	CO1
2.	List the basic components of a numerical relay.	BT-2	Understand	CO1
3.	State Nyquist-Shannon sampling theorem and its relevance to numerical protection.	BT-2	Understand	CO1
4.	How does correlation with a reference wave improve the accuracy of numerical protection schemes?	BT-2	Understand	CO1
5.	Define the Least Error Squared (LES) technique and its role in numerical relaying.	BT-2	Understand	CO1
6.	What is the function of digital filtering in numerical overcurrent protection?	BT-1	Remember	CO1
7.	Identify one advantage of numerical protection over traditional protection methods.	BT-3	Apply	CO1
8.	Sketch a simplified block diagram of a numerical relay and label its main components.	BT-1	Remember	CO1
9.	Discuss the importance of sampling rate in numerical protection systems.	BT-1	Remember	CO1
10.	How does numerical protection enhance system reliability compared to analog protection?	BT-3	Apply	CO1
11.	Define the concept of numerical transformer differential protection.	BT-2	Understand	CO1
12.	State the principles behind numerical distance protection for transmission lines.	BT-1	Remember	CO1
13.	What are the potential drawbacks of numerical protection systems?	BT-1	Remember	CO1

14.	Compare and contrast analog and numerical protection schemes	BT-2	Understand	CO1
15.	Discuss the role of digital signal processing in numerical protection.	BT-4	Analyze	CO1
16.	Explain how numerical relays handle fault detection and discrimination.	BT-4	Analyze	CO1
17.	What are the key features of a digital relay compared to an analog relay?	BT-4	Analyze	CO1
18.	Interpret the operation of a directional overcurrent relay in numerical protection.	BT-3	Apply	CO1
19.	Discuss the challenges associated with implementing numerical protection schemes.	BT-6	Create	CO1
20.	How does the integration of communication capabilities enhance numerical protection systems?	BT-5	Evaluate	CO1
21.	Generalize the concept of adaptive protection in numerical relaying.	BT-3	Apply	CO1
22.	What factors should be considered when selecting a numerical relay for a specific application?	BT-4	Analyze	CO1
23.	State the importance of coordination between different protection relays in a system.	BT-1	Remember	CO1
24.	List the advantages of using numerical relays for transformer protection.	BT-2	Understand	CO1
	PART – B			
1.	What is numerical protection and how does it differ from traditional protection schemes?	BT-1	Remember	CO1
2.	Explain the block diagram of a typical numerical relay used in power systems	BT-2	Understand	CO1
3.	How does the sampling theorem apply to numerical protection relays?	BT-1	Remember	CO1
4.	Discuss the importance of correlation with a reference wave in numerical protection schemes	BT-1	Remember	CO1
5.	Explain the Least Error Squared (LES) technique and its significance in numerical relay operation	BT-2	Understand	CO1
6.	What role does digital filtering play in numerical overcurrent protection?	BT-2	Understand	CO1
7.	Describe the principles and operation of numerical transformer differential protection	BT-3	Apply	CO1
8.	Discuss the challenges and advantages of numerical distance protection for transmission lines.	BT-2	Understand	CO1
9.	How do numerical protection schemes enhance system reliability and security compared to analog methods?	BT-4	Analyze	CO1
10.	Explain the concept of adaptive protection and its relevance to numerical relaying systems	BT-5	Evaluate	CO1
11.	What are the key factors to consider when selecting and configuring numerical protection relays for a power system?	BT-4	Analyze	CO1
12.	Discuss the integration of communication capabilities in modern numerical relays and its impact on system monitoring and control	BT-2	Understand	CO1

13.	How do numerical protection schemes adapt to fault conditions and changing system dynamics?	BT-3	Apply	CO1
14.	Explain the role of self-testing and diagnostics in ensuring the reliability of numerical protection systems.	BT-2	Understand	CO1
15.	Discuss the potential cybersecurity risks associated with digital numerical relays and methods to mitigate them.	BT-6	Create	CO1
16.	Explain how numerical protection differs from traditional protection schemes.	BT-4	Analyze	CO1
17.	Analyse Least Error Squared (LES) technique and its significance.	BT-4	Analyze	CO1

UNIT II - DIGITAL PROTECTION OF TRANSMISSION LINE

Introduction - Protection scheme of transmission line – Distance relays - Traveling wave relays - Digital protection scheme based upon fundamental signal - Hardware design - Software design - Digital protection of EHV/UHV transmission line based upon traveling wave phenomenon - new relaying scheme using amplitude comparison

PART - A

Q.No	Questions	BT Level	Competence	Course outcomes
1.	What is the primary objective of digital protection in transmission line systems?	BT-1	Remember	CO2
2.	List the basic components of a protection scheme for transmission lines	BT-2	Understand	CO2
3.	What is the operation of distance relays in protecting transmission lines?	BT-1	Remember	CO2
4.	What is the significance of traveling wave relays in transmission line protection?	BT-4	Analyze	CO2
5.	Define the fundamental signal and its role in digital protection schemes.	BT-2	Understand	CO2
6.	Discuss the key considerations in hardware design for digital protection systems.	BT-6	Create	CO2
7.	How does software design influence the performance of digital protection schemes?	BT-1	Remember	CO2
8.	Interpret the concept of digital protection for EHV/UHV transmission lines	BT-1	Remember	CO2
9.	How the traveling wave phenomenon is utilized in digital protection of transmission lines?	BT-1		CO2
10.	What advantages does digital protection offer over traditional analog methods in transmission line protection?	BT-2	Understand	CO2
11.	Outline the key features of a new relaying scheme utilizing amplitude comparison for transmission line protection.	BT-5	Evaluate	CO2
12.	How does digital protection improve the reliability and responsiveness of transmission line protection?	BT-2	Understand	CO2
13.	Discuss the challenges associated with implementing digital protection schemes for transmission lines.	BT-3	Apply	CO2

14.	List the importance of communication interfaces in digital protection systems for transmission lines.	BT-4	Analyze	CO2
15.	Explain the concept of adaptive protection and its relevance to digital protection of transmission lines	BT-3	Apply	CO2
16.	What role do fault location algorithms play in digital protection of transmission lines?	BT-2	Understand	CO2
17.	How do digital protection schemes adapt to varying fault conditions and system dynamics?	BT-5	Evaluate	CO2
18.	Discuss the integration of real-time monitoring capabilities in digital protection systems for transmission lines.	BT-1	Remember	CO2
19.	What advancements in technology have enabled the development of digital protection schemes for transmission lines?	BT-1	Remember	CO2
20.	Evaluate the concept of multi-zone protection in digital protection systems for transmission lines.	BT-5	Evaluate	CO2
21.	What are the benefits of utilizing numerical techniques in digital protection of transmission lines?	BT-4	Analyze	CO2
22.	State the principles of fault detection and isolation in digital protection schemes for transmission lines.	BT-1	Remember	CO2
23.	How does digital protection contribute to the overall efficiency and reliability of the transmission grid?	BT-5	Evaluate	CO2
24.	What future advancements do you foresee in digital protection technology for transmission lines, and how might they address current challenges?	BT-4	Analyze	CO2
PART - B				
1.	What are the key objectives of digital protection schemes for transmission lines?	BT-1	Remember	CO2
2.	Describe the protection scheme commonly used for transmission lines and its components	BT-1	Remember	CO2
3.	How do distance relays operate in the protection of transmission lines?	BT-1	Remember	CO2
4.	Explain the concept of traveling wave relays and their significance in transmission line protection	BT-2	Understand	CO2
5.	Discuss the fundamentals of digital protection schemes based on fundamental signal processing	BT-3	Apply	CO2
6.	What are the key considerations in the hardware design of digital protection systems for transmission lines?	BT-4	Analyze	CO2
7.	Explain the importance of software design in implementing digital protection schemes	BT-3	Apply	CO2
8.	Discuss the specific challenges and considerations in the digital protection of EHV/UHV transmission lines.	BT-4	Analyze	CO2
9.	How does the traveling wave phenomenon contribute to the effectiveness of digital protection schemes for transmission lines?	BT-5	Evaluate	CO2
10.	Describe a new relaying scheme utilizing amplitude comparison in digital protection systems	BT-6	Create	CO2

11.	What are the advantages of digital protection schemes over traditional analog methods for transmission line protection?	BT-4	Analyze	CO2
12.	Discuss the role of communication technologies in enhancing the performance of digital protection systems for transmission lines.	BT-5	Evaluate	CO2
13.	How do digital protection schemes adapt to changing system conditions and fault scenarios?	BT-6	Create	CO2
14.	Explain the process of fault detection and isolation in digital protection systems for transmission lines.	BT-4	Analyze	CO2
15.	Discuss the future trends and advancements in digital protection technology for transmission lines.	BT-5	Evaluate	CO2
16.	Interpret the fundamentals of digital protection schemes based on fundamental signal processing	BT-3	Apply	CO2
17.	Explain how digital protection schemes adapt to changing system conditions and fault scenarios?	BT-4	Analyze	CO2

UNIT III- DIGITAL PROTECTION OF SYNCHRONOUS GENERATOR & TRANSFORMER

Introduction - Faults in synchronous generator - Protection schemes for Synchronous Generator - Digital protection of Synchronous Generator - Faults in a Transformer - Schemes used for Transformer Protection - Digital Protection of Transformer.

PART - A

Q.No	Questions	BT Level	Competence	Course outcomes
1.	What is the primary purpose of digital protection in synchronous generators?	BT-1	Remember	CO1
2.	List the common fault that can occur in a synchronous generator	BT-1	Remember	CO1
3.	Outline the basic components of protection schemes used for synchronous generators	BT-1	Remember	CO1
4.	How does digital protection enhance the reliability of synchronous generator protection?	BT-1	Remember	CO5
5.	Identify one fault commonly encountered in transformers	BT-1	Remember	CO1
6.	Discuss the primary protection schemes employed for transformer protection	BT-2	Understand	CO1
7.	List the significance of digital protection in safeguarding synchronous generators	BT-2	Understand	CO5
8.	What are the potential consequences of a fault in a transformer?	BT-2	Understand	CO1
9.	Generalise the main functions of protection schemes used for transformer protection	BT-2	Understand	CO1
10.	How does digital protection technology improve the efficiency of transformer protection?	BT-3	Apply	CO5

11.	What are the key features of digital protection systems for synchronous generators?	BT-3	Apply	CO1
12.	Discuss the importance of selecting appropriate protection schemes for synchronous generators	BT-3	Apply	CO1
13.	How does digital protection contribute to the early detection of faults in transformers?	BT-4	Analyze	CO5
14.	What are the main challenges associated with implementing digital protection for synchronous generators?	BT-4	Analyze	CO5
15.	Analyse the role of coordination between different protection devices in synchronous generators.	BT-4	Analyze	CO5
16.	Interpret one method used in digital protection systems to detect faults in transformers.	BT-4	Analyze	CO1
17.	What factors should be considered when designing protection schemes for synchronous generators?	BT-5	Evaluate	CO1
18.	Discuss the benefits of using digital protection over traditional analog methods for transformers.	BT-5	Evaluate	CO1
19.	How digital protection technology adapts to various fault scenarios in synchronous generators?	BT-5	Evaluate	CO1
20.	What are the advantages of using numerical techniques in digital protection of synchronous generators?	BT-6	Create	CO1
21.	How does digital protection technology improve the responsiveness of protection schemes for synchronous generators?	BT-5	Evaluate	CO5
22.	Discuss the importance of real-time monitoring in digital protection systems for transformers.	BT-4	Analyze	CO5
23.	What advancements in digital protection technology can be expected for synchronous generators in the future?	BT-4	Analyze	CO1
24.	How does digital protection technology contribute to the overall reliability and stability of the power system?	BT-4	Analyze	CO1
	PART - B			
1.	What are the common types of faults that can occur in a synchronous generator, and why is protection essential for these faults?	BT-1	Remember	CO1
2.	Discuss the traditional protection schemes used for synchronous generators and their limitations.	BT-1	Remember	CO1
3.	How does digital protection enhance the reliability and efficiency of synchronous generator protection?	BT-1	Remember	CO5
4.	Explain the key considerations in designing digital protection systems for synchronous generators.	BT-2	Understand	CO5
5.	What are the various types of faults that can occur in a transformer, and why is protection crucial for transformer operation?	BT-2	Understand	CO1
6.	Describe the traditional protection schemes employed for transformer protection and their functionalities.	BT-3	Apply	CO5

7.	How do digital protection schemes improve the performance and responsiveness of transformer protection?	BT-3	Apply	CO1
8.	Discuss the challenges associated with implementing digital protection for transformers and how they are addressed.	BT-4	Analyze	CO5
9.	What are the specific protection functions typically incorporated into digital protection systems for synchronous generators?	BT-5	Evaluate	CO5
10.	Explain the principles behind the digital protection of synchronous generators and the algorithms used for fault detection and discrimination	BT-6	Create	CO1
11.	What are the primary protection functions provided by digital protection systems for transformers, and how do they operate?	BT-3	Apply	CO5
12.	Describe the methodologies used in digital protection schemes to detect and mitigate faults in transformers.	BT-4	Analyze	CO1
13.	Discuss the importance of communication interfaces in digital protection systems for synchronous generators and transformers.	BT-5	Evaluate	CO1
14.	How do digital protection schemes adapt to varying operating conditions and fault scenarios in synchronous generators and transformers?	BT-6	Create	CO5
15.	Analyse what advancements and future trends do you foresee in digital protection technology for synchronous generators and transformers.	BT-4	Analyze	CO1
16.	Explain in detail the common types of faults that can occur in a synchronous generator.	BT-2	Understand	CO1
17.	Analyse the principles behind the digital protection of synchronous generators and the algorithms used.	BT-4	Analyze	CO1

UNIT IV- DISTANCE AND OVERCURRENT RELAY SETTING AND CO- ORDINATION

Directional instantaneous IDMT over current relay - Directional multi-Zone distance relay - Distance relay setting - Co-ordination of distance relays - Co-ordination of over current relays - Computer graphics display - Man-machine interface subsystem - Integrated operation of national power system - Application of computer graphics.

PART – A

Q.No	Questions	BT Level	Competence	Course outcomes
1.	What is the purpose of directional instantaneous IDMT overcurrent relays?	BT-1	Remember	CO3
2.	Outline the concept of a directional multi-zone distance relay.	BT-6	Create	CO3
3.	How are distance relays set in power systems for optimal performance?	BT-6	Analyze	CO3
4.	Discuss the importance of coordinating distance relays in a power system.	BT-1	Remember	CO3

5.	What factors are considered when coordinating overcurrent relays?	BT-4	Analyze	CO3
6.	How does a computer graphics display enhance relay settings and coordination?	BT-1	Remember	CO3
7.	What is the function of a man-machine interface subsystem in relay settings?	BT-1	Remember	CO3
8.	What are the benefits of integrated operation of the national power system?	BT-1	Remember	CO3
9.	How are computer graphics utilized in the application of relay settings?	BT-2	Understand	CO3
10.	State the principle behind directional operation in instantaneous IDMT overcurrent relays.	BT-2	Understand	CO3
11.	What advantages does a multi-zone distance relay offer over a single-zone relay?	BT-2	Understand	CO3
12.	What parameters are typically adjusted during distance relay setting?	BT-3	Apply	CO3
13.	Discuss the challenges associated with coordinating distance relays in a complex network.	BT-3	Apply	CO3
14.	How does coordination between overcurrent relays prevent unnecessary tripping?	BT-3	Apply	CO3
15.	Generalise one feature of a computer graphics display used in relay settings.	BT-3	Apply	CO3
16.	What role does the man-machine interface subsystem play in relay coordination?	BT-3	Apply	CO3
17.	How does the integrated operation of the national power system improve relay coordination?	BT-4	Analyze	CO3
18.	What types of faults are typically detected by directional instantaneous IDMT overcurrent relays?	BT-4	Analyze	CO3
19.	Compare and contrast the operation of single-zone and multi-zone distance relays	BT-5	Evaluate	CO3
20.	Why is it important to ensure proper coordination between distance relays?	BT-4	Analyze	CO3
21.	Discuss the impact of improper coordination between overcurrent relays on system operation	BT-4	Analyze	CO3
22.	List a specific function of computer graphics in relay coordination	BT-3	Apply	CO3
23.	How does the man-machine interface subsystem improve the efficiency of relay settings?	BT-4	Analyze	CO3
24.	What are the potential benefits of integrating relay coordination into the operation of the national power system?	BT-5	Evaluate	CO3
PART – B				
1.	What is the purpose of directional instantaneous IDMT overcurrent relays, and how do they differ from non-directional relays?	BT-3	Apply	CO3

2.	Explain the operation and advantages of directional multi-zone distance relays in power system protection	BT-6	Create	CO3
3.	What factors should be considered when setting distance relays for optimal performance in a power system?	BT-5	Evaluate	CO3
4.	Discuss the importance of coordination between distance relays to ensure selective tripping during faults	BT-1	Remember	CO3
5.	How is coordination achieved between overcurrent relays in a power system to prevent unnecessary tripping and ensure selective fault clearing?	BT-1	Remember	CO3
6.	Describe the principles of computer graphics display in relay settings and coordination, and how does it facilitate the visualization of protection schemes?	BT-1	Remember	CO3
7.	Explain the role of the man-machine interface subsystem in relay setting and coordination, and how does it improve operator interaction with protection systems?	BT-2	Understand	CO3
8.	Discuss the benefits of integrated operation of the national power system in relay setting and coordination.	BT-2	Understand	CO3
9.	How can computer graphics be applied in relay setting and coordination processes to enhance efficiency and accuracy?	BT-4	Analyze	CO3
10.	Describe the challenges associated with coordinating distance relays in a network with complex transmission lines and interconnected systems.	BT-4	Analyze	CO3
11.	What strategies can be employed to achieve optimal coordination between overcurrent relays in a power system with varying fault conditions and load levels?	BT-1	Remember	CO3
12.	Explain the role of advanced communication technologies in improving the coordination of distance and overcurrent relays in large-scale power systems.	BT-2	Understand	CO3
13.	How do modern relay coordination methods incorporate fault location algorithms to enhance system reliability and performance.	BT-2	Understand	CO3
14.	Discuss the importance of real-time data monitoring and analysis in maintaining effective relay coordination and protection in power systems.	BT-4	Analyze	CO3
15.	What advancements in relay technology and coordination methodologies can be expected in the future, and how might they address emerging challenges in power system protection?	BT-6	Create	CO3
16.	Analyse the role of the man-machine interface subsystem in relay setting and coordination, and how does it improve operator interaction with protection systems?	BT-4	Analyze	CO3
17.	Generalise the benefits of integrated operation of the national power system in relay setting and coordination.	BT-5	Evaluate	CO3

UNIT V - PC APPLICATIONS FOR DESIGNING PROTECTIVE RELAYING				
Types of faults – Assumptions - Development of algorithm for SC studies - PC based integrated software for SC studies - Transformation to component quantities - SC studies of multiphase systems Ultra-high-speed protective relays for high voltage long transmission line.				
PART - A				
Q.No	**Questions**	**BT Level**	**Competence**	**Course outcomes**
1.	What are the different types of faults that can occur in power systems?	BT-6	Create	CO4
2.	List the assumptions made during the development of algorithms for short-circuit (SC) studies	BT-3	Apply	CO4
3.	How are algorithms developed for conducting short-circuit studies in protective relaying?	BT-2	Understand	CO4
4.	What are the advantages of using PC-based integrated software for conducting SC studies?	BT-6	Create	CO4
5.	Interpret the process of transforming electrical quantities to component quantities during SC studies.	BT-5		CO4
6.	How do SC studies differ when analyzing multiphase systems compared to single-phase systems?	BT-4	Analyze	CO4
7.	What are the characteristics of ultra-high-speed protective relays designed for high voltage long transmission lines?	BT-1	Remember	CO4
8.	Discuss one common fault scenario encountered in power systems	BT-3	Apply	CO4
9.	What are the key factors considered when developing algorithms for SC studies?	BT-2	Understand	CO4
10.	How does PC-based integrated software facilitate the analysis of SC studies?	BT-1	Remember	CO4
11.	List the importance of accurate assumptions in developing algorithms for SC studies	BT-4	Analyze	CO4
12.	What role does PC-based integrated software play in transforming electrical quantities for SC studies?	BT-5	Evaluate	CO4
13.	Interpret the challenges associated with conducting SC studies in multiphase systems	BT-2	Understand	CO4
14.	What are the advantages of using ultra-high-speed protective relays in high voltage long transmission lines?	BT-4	Analyze	CO4
15.	Discuss the significance of conducting SC studies in protective relaying	BT-1	Remember	CO4
16.	How does PC-based integrated software enhance the efficiency of conducting SC studies?	BT-1	Remember	CO4
17.	Outline the process of transforming electrical quantities to component quantities for SC studies	BT-2	Understand	CO4
18.	What considerations should be made when analyzing SC studies in multiphase systems?	BT-1	Remember	CO4

19.	Generalise the key characteristics of protective relaying schemes used in power systems	BT-1	Remember	CO4
20.	Discuss the role of PC-based integrated software in optimizing protective relaying schemes	BT-4	Analyze	CO4
21.	What are the potential benefits of using PC-based integrated software for SC studies?	BT-1	Remember	CO4
22.	State the challenges associated with conducting SC studies in ultra-high-speed protective relays	BT-6	Creaste	CO4
23.	How does PC-based integrated software contribute to the overall reliability of protective relaying schemes?	BT-4	Analyze	CO4
24.	Discuss the advancements in PC applications for designing protective relaying schemes	BT-5	Evaluate	CO4
	PART - B			
1.	What are the different types of faults encountered in power systems, and how do they impact the design of protective relaying schemes?	BT-1	Remember	CO4
2.	Discuss the assumptions made during the development of algorithms for short-circuit (SC) studies in protective relaying.	BT-1	Remember	CO4
3.	How are algorithms developed and utilized for SC studies in protective relaying schemes, and what considerations are involved in their implementation?	BT-1	Remember	CO4
4.	Explain the role of PC-based integrated software in facilitating SC studies for the design of protective relaying schemes.	BT-1	Remember	CO4
5.	What are the steps involved in transforming electrical quantities to component quantities during SC studies for protective relaying?	BT-2	Understand	CO4
6.	Describe the functionalities and advantages of PC-based integrated software for conducting SC studies in protective relaying scheme design.	BT-2	Understand	CO4
7.	How do SC studies differ in the analysis of multiphase systems compared to single-phase systems in protective relaying?	BT-4	Analyze	CO4
8.	Discuss the challenges associated with conducting SC studies for ultra-high-speed protective relays designed for high voltage long transmission lines	BT-3	Apply	CO4
9.	Explain the significance of accurate fault modeling and data input in PC applications used for designing protective relaying schemes	BT-4	Analyze	CO4

10.	How do PC applications assist in optimizing protective relay settings and coordination to improve system reliability and performance?	BT-4	Analyze	CO4
11.	What are the limitations of PC-based applications for designing protective relaying schemes, and how can these limitations be addressed?	BT-3	Apply	CO4
12.	Describe the process of data interpretation and analysis in PC applications for designing protective relaying schemes	BT-4	Analyze	CO4
13.	Discuss the potential integration of advanced simulation techniques, such as electromagnetic transient (EMT) simulation, into PC applications for enhanced protective relaying scheme design	BT-5	Evaluate	CO4
14.	How can PC applications be utilized to assess the impact of system changes or expansions on existing protective relaying schemes?	BT-2	Understand	CO4
15.	What advancements in PC-based tools for designing protective relaying schemes can be expected in the future, and how might they address evolving needs in power system protection?	BT-5	Evaluate	CO4
16.	Explain the different types of faults encountered in power systems, and how do they impact the design of protective relaying schemes?	BT-2	Understand	CO4
17.	Analyse the steps involved in transforming electrical quantities to component quantities during SC studies for protective relaying	BT-4	Analyze	CO4

Course Outcome

Upon completion of the course,

1. Familiarize the underlying principle of digital techniques for power system protection
2. Design the relaying scheme for protection of power apparatus using digital techniques.
3. Evaluate and interpret relay coordination.
4. Develop PC based algorithm for short circuit studies
5. Compare the performance of modern protection schemes with the conventional schemes.