

# AMEE21 SWITCH GEAR & PROTECTION

## UNIT-1 INTRODUCTION TO PROTECTION SYSTEM:

- 1.1 Introduction to protection system and its elements,
- 1.2 Functions of protective relaying,
- 1.3 Protective zones, primary and backup protection,
- 1.4 Desirable qualities of protective relaying, basic terminology.
- 1.5 Relays: Electromagnetic, attracted and induction type relays, thermal relay,
- 1.6 Gas actuated relay, design considerations of electromagnetic relay.

## UNIT-2 RELAY APPLICATION AND CHARACTERISTICS

- 2.1 Amplitude and phase comparators,
- 2.2 Over current relays,
- 2.3 Directional relays, distance relays, differential relay
- 2.4 Static Relays: Comparison with electromagnetic relay,
- 2.5 Classification and their description,
- 2.6 Over current relays, directional relay, distance relays, differential relay.

## UNIT-3 PROTECTION OF TRANSMISSION LINE

- 3.1 Over current protection,
- 3.2 Distance protection, pilot wire protection,
- 3.3 Carrier current protection, protection of bus, auto re-closing,

## UNIT-4 CIRCUIT BREAKING

- 4.1 Properties of arc, arc extinction theories,
- 4.2 Re-striking voltage transient, current chopping,
- 4.3 Resistance switching, capacitive current interruption,
- 4.4 Short line interruption, circuit breaker ratings.
- 4.5 Testing Of Circuit Breaker: Classification,
- 4.6 Testing station and equipment's,
- 4.7 Testing procedure, direct and indirect testing

## UNIT-V APPARATUS PROTECTION

- 5.1 Protection of Transformer, generator and motor.
- 5.2 Circuit Breaker: Operating modes, selection of circuit breakers,
- 5.3 Constructional features and operation of Bulk Oil, Minimum Oil,
- 5.4 Air Blast, SF<sub>6</sub>, Vacuum and d. c. circuit breakers.

## Reference Books:

1. B. Ram and D. N. Vishwakarma, "Power System Protection and Switchgear", Tata Mc. Graw Hill
2. Y. G. Paithankar and S R Bhide, "Fundamentals of Power System Protection", Prentice Hall of India.