

Table of Contents

- 1. Introduction to Electric Power System Installation**
 - Scope and objectives
 - Types of power systems
 - Installation standards and codes
 - Safety regulations
- 2. Fundamentals of Electric Power Systems**
 - Power generation
 - Transmission systems
 - Distribution networks
 - Electrical power flow
- 3. Power System Components**
 - Power transformers
 - Switchgear
 - Circuit breakers
 - Disconnect switches
 - Busbars
- 4. Electrical Drawings and System Documentation**
 - Single-line diagrams
 - Wiring diagrams
 - Equipment layouts
 - Technical specifications
- 5. Power Cable Installation**
 - Cable selection
 - Cable routing methods
 - Cable laying techniques
 - Cable termination and jointing
- 6. Grounding and Earthing Systems**
 - Grounding principles
 - Earthing system design
 - Ground resistance measurement
 - Lightning protection systems
- 7. Installation of Distribution Equipment**
 - Low-voltage (LV) installations
 - Medium-voltage (MV) installations
 - Distribution boards
 - Motor Control Centers (MCCs)
- 8. Protection and Control Systems**
 - Protective relays
 - Overcurrent protection
 - Differential protection
 - Control circuits
 - Protection coordination

9. Testing and Commissioning

- Insulation resistance testing
- Continuity testing
- Functional testing
- Acceptance testing
- Commissioning procedures

10. Operation and Maintenance

- Preventive maintenance
- Predictive maintenance
- Troubleshooting
- Reliability improvement

11. Electrical Safety Practices

- Electrical hazards
- Personal Protective Equipment (PPE)
- Lockout/Tagout (LOTO)
- Safe work procedures

12. Power Quality and Energy Efficiency

- Voltage regulation
- Harmonic distortion
- Power factor correction
- Energy-saving practices

13. Industrial Power System Installations

- Industrial substations
- Emergency power systems
- Backup generators
- Industrial electrical infrastructure

14. Codes, Standards, and Regulations

- IEC standards
- IEEE standards
- National Electrical Code (NEC)
- Inspection and compliance

15. Modern Developments in Power System Installation

- Smart grids
- Digital substations
- Renewable energy integration
- Condition monitoring
- Intelligent power management