

Pokhara University Teaching Hospital
Curriculum for Electrician (Assistant) Level Examination

For Written Examination
Full Marks: 65

There shall be 3 hrs. written examination based on the following syllabus:

Group A: Written Examination

65 Marks

Section I (35)

1. Basic Electrical Engineering:

- Fundamentals of Electricity: Voltage, Current, Resistance, Power
- Ohm's Law, Kirchhoff's Laws, and Basic Electrical Theorems
- Electrical Circuits: Series and Parallel Circuits
- AC and DC Circuits: Differences and Applications
- Power Factor, Energy Efficiency

2. Electrical Machines:

- Transformers: Principles, Types, and Applications
- Motors: AC and DC Motors, Starting Methods, and Maintenance
- Generators: Working Principles, Uses in Hospitals
- Alternators and Inverters: Functions and Applications

3. Wiring and Installation:

- Types of Wiring: Conduit, Surface, Casing, and Capping
- Wiring Accessories: Switches, Sockets, Circuit Breakers, Fuses
- Electrical Panels and Distribution Boards
- Hospital-Specific Wiring Standards (Special requirements for healthcare environments)
- Earthing and Grounding: Importance in Electrical Safety
- Lighting Systems: Types, Design, and Maintenance in Hospitals

4. Electrical Maintenance and Troubleshooting:

- Preventive and Corrective Maintenance
- Fault Detection and Diagnosis in Electrical Systems
- Repair of Electrical Equipment and Wiring
- Maintenance of Electrical Systems in Healthcare Settings (e.g., surgical lights, ventilation systems, power supply for critical equipment)

- Uninterrupted Power Supply (UPS) and Backup Power Systems

Section II (30)

5. Safety Measures and Regulations:

- Electrical Safety Standards in Hospitals
- Personal Protective Equipment (PPE) for electricians
- Fire Safety and Emergency Procedures
- National Electrical Code (NEC) and Nepal Electricity Rules
- Handling and Maintenance of Emergency Power Systems (Generators, Backup Systems)

6. Control Systems and Automation:

- Basics of Electrical Control Systems
- Working with Relays, Contactors, and Timers
- Basics of Programmable Logic Controllers (PLC)
- Hospital Automation Systems: BMS (Building Management System)

7. Testing and Measuring Instruments:

- Use of Multimeters, Meggers, and Clamp Meters
- Testing Insulation Resistance, Continuity, and Earth Resistance
- Calibration of Electrical Instruments

8. Hospital-Specific Electrical Systems:

- Maintenance of Medical Electrical Equipment (e.g., X-ray machines, ventilators)
- Special Attention to Critical Areas: ICUs, Operation Theaters, Laboratories
- Installation and Maintenance of Power Supply in Sensitive Areas
- Clean Energy Solutions and Power Quality Management in Hospitals

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For Practical Examination
Full Marks: 35

Practical examination based on the following syllabus:

Group B: Practical Examination

35 Marks

1. Electrical Panel and Circuit Diagnosis
2. Grounding and Bonding in Patient Care Areas
3. Emergency Power System Maintenance
4. Isolated Power Systems (IPS) Testing
5. Testing Medical Equipment for Electrical Safety
6. Hospital-Specific Safety Procedures
