

**Pokhara University Service Commission**  
**Curriculum for Assistant Instructor Electrical Level Examination**  
**Time: 4hr** Full marks: 75

1. Basic Circuit Theory 8
  - a. Basic Concept of dc electric Circuit- electric Circuit, voltage, resistance, ohm's law, Kirchoff 's laws, power and energy, series and parallel connection of resistors, Basic Concept of ac electric Circuit- nature of ac voltage and current, pharos diagram of ac quantities, single phase ac circuit with- R,L,C, series circuit with RL,RC, RLC< ac parallel circuit, resonance in ac series and parallel circuits. Three phase ac circuit.
2. Electric Machine 8
  - a. Construction details, operating principle, operating characteristics, testing and performance analysis of following electric Machines- Transformer (single phase and three phase), dc generator, dc motor, three phase induction motors, single phase induction motors, three phase synchronous generator motor.
3. Instrumentation 8
  - b. Construction and operating principle of Moving coil instruments as ammeter and voltmeter, electro- dynamic instruments as wattmeter and energy meters. Measurement of active and reactive power in , single phase circuit and three phase circuits.
4. Power System 10
  - c. Generating System- type of turbine and generator used in hydro power plant and thermal, power plants, different parts of hydro electro power plants, Speed governing system, excitation system and automatic voltage regulator (AVR).
  - d. Transmission system – line parameters, equivalent circuits of short, medium and their performance analysis. Distribution system – types of distribution line, voltage drop calculation and conductor size calculation
  - e. Substation - types of substations, major equipment used in sub-station.
5. Utilization of electrical energy 8
  - a. Illumination - luminous flux, luminous intensity, illumination level, different type of light sources for illumination of interior and exterior, Laws of illumination, basic concept of planning and design of illumination.
  - b. Industrial Utilization - types of drives, selection of motors for different applications. Electricity tariff and power factor correction.
6. Protection system 8
  - a. Fuses and circuit breaker for L.V. application, Isolators and contactors, Circuit breakers for H.V. applications, CT and PT for protection schemes, IDMT relays, protection schemes for generator, transformers, transmission line and distribution lines. Fault calculation. Earthing system.
7. Electrical Installation 15
  - a. Domestic wiring system - Types of wiring system, distribution board and wring diagrams (Layout and connection diagrams), testing of wiring system - insulation test and earthing test.
  - b. Industrial wiring system - Types of wiring system, H.V. power intake system, Cable tray and trunking system, motor control system using relay,

timer, contactor for starting, overload and short circuit protection, over speed protection.

**8. Maintenance and repair of electrical equipment** **10**

- a. Regular maintenance schedule of various electrical equipment such as - Power transformers, small and large electric motors, generators used in power plants.
- b. General testing procedure for repair and maintenance works - Continuity test, short circuit test, Repair of transformer and electric motors.