

नेपाल नागरिक उड्डयन प्राधिकरण
प्राविधिक सेवा, इलेक्ट्रिकल ईन्जिनियरिङ्ग समूह, चौथो तह, सहायक पदको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

द्वितीय पत्र - सेवा सम्बन्धी

खण्ड (क) – ५० अङ्क

1. **Fundamental of Electrical Engineering**
 - 1.1 Electric circuit, electric charge, electric potential, potential difference, EMF, Ohm's law and Kirchoff's law
 - 1.2 Conductor, semi-conductor and insulator
 - 1.3 Resistance, resistivity, effect of temperature on resistance, Ohmic and non-Ohmic resistance, series and parallel combination of resistance, power dissipation in resistor, insulation resistance
 - 1.4 Inductance, series and parallel combination of inductance
 - 1.5 Capacitance, series and parallel combination of capacitance
 - 1.6 Cells and Batteries: Dry cell and Lead Acid Battery – construction; maintenance – free battery; cells in series and parallel combination
 - 1.7 Open circuit and short circuit
2. **Power Generation**
 - 2.1 Hydro Electric Power Plant: Major components, advantages and disadvantages
 - 2.2 Diesel Generator Plant: Major components, advantages, disadvantages
 - 2.3 Introduction of Solar Power and Wind Power
 - 2.4 Introduction of changeover switch, UPS
3. **Electric Machines**
 - 3.1 Introduction, function and Operating principle of Transformer, testing of transformer.
 - 3.2 Introduction, function and operation principle of Alternator/Generator, AC/DC motor, AC/DC motor starter
4. **Power Distribution and Consumer Services**
 - 4.1 Feeders, distributors, service mains/wire
 - 4.2 Energy meter and its connection
 - 4.3 Overhead conductor
 - 4.4 3-ph, 4-wire distribution system
5. **Power System Control and Protection**
 - 5.1 Fuses: connection, protective function, types, rating and application
 - 5.2 MCB: connection, protective function, types, rating and application
 - 5.3 MCCB: protective function, rating and application
 - 5.4 Magnetic Contractors: function and application
 - 5.5 Introduction and function of air circuit breaker, vacuum circuit breaker, protective relays
 - 5.6 Lightning Arrestor: connection and function

खण्ड (ख) – ५० अङ्क

6. **Electrical Measuring Equipment**
 - 6.1 Ammeter: connection and measuring procedure
 - 6.2 Voltmeter: connection and measuring procedure
 - 6.3 Ohmmeter: connection and measuring procedure
 - 6.4 Insulation Tester: connection and measuring procedure
7. **Electrical Safety**
 - 7.1 General safety precautions in electrical maintenance
 - 7.2 Importance of earthing, Rod earthing, Pipe earthing and Plate earthing
 - 7.3 Precaution with chemical, safety with fire
 - 7.4 Electric shock; first aid requirement for electric shock

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8. **Electrical Maintenance Procedures**

- 8.1 Preventive maintenance: concept, general procedures/steps
- 8.2 Corrective maintenance: concept, general procedures/steps
- 8.3 Preventive maintenance of battery, earthing system, lighting system

9. **Electrical Wiring and Installation**

- 9.1 Electric wiring system: PVC casing capping, conduit surface and concealed wiring
- 9.2 Types of electric lamps: Incandescent, Fluorescent, CFL, LED, Sodium vapour discharge lamp, Mercury vapour discharge lamp
- 9.3 Power point wiring system, wiring of sub-distribution and main distribution board
- 9.4 Determination of size and length of cable for lighting and power point wiring
- 9.5 Determination of proper rating of fuse, switch, MCB, socket for lighting and power point wiring

10. **Aeronautical Ground Lighting System**

- 10.1 Introduction of runway edge light, runway threshold light, runway end light, taxiway edge light, runway turn pad light, approach light, apron flood light, PAPI/APAPI light

द्वितीय पत्रबाट निम्नानुसार प्रश्न सोधिनेछ :

खण्ड	अङ्कभार	विषयगत प्रश्न संख्या	
		छोटो उत्तर	लामो उत्तर
(क)	५०	६ प्रश्न X ५ अङ्क= ३०	२ प्रश्न X १० अङ्क= २०
(ख)	५०	६ प्रश्न X ५ अङ्क= ३०	२ प्रश्न X १० अङ्क= २०
जम्मा	१००	१२ प्रश्न X ५ अङ्क= ६०	४ प्रश्न X १० अङ्क= ४०

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पूर्णाङ्क : ३०

उत्तीर्णाङ्क : १५

1. House wiring

10 Marks

- 1.1 Introduction of house wiring
- 1.2 Types of wires used in house wiring
- 1.3 Cable sizing
- 1.4 Types of wiring
- 1.5 SP/DP/TP MCB sizing and connection
- 1.6 Panel board connection.
- 1.7 Cable shoe size and connection

2. Light and Power circuit

10 Marks

- 2.1 Light circuit connection,
- 2.2 Earthing connection
- 2.3 Power circuit connection
- 2.4 Connection of lamp in series and parallel,
- 2.5 lamp connection by one-way, two-way switch

3. Control

10 Marks

- 3.1 Bell connection by one switch,
- 3.2 Bell connection by two switch.
- 3.3 Types and connection of contactor; Relay-contactor circuit
- 3.4 Push button switch control