

## लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, मेकानिकल समूह, निर्माण उपकरण संभार उपसमूह, राजपत्र अनंकित प्रथम श्रेणी, सिनियर इलेक्ट्रिसियन पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसार एक चरणमा परीक्षा लिइने छ :

लिखित परीक्षा

पूर्णाङ्क :- १००

अन्तर्वार्ता

पूर्णाङ्क :- २०

प्रथम चरण – लिखित परीक्षा योजना (Examination Scheme)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या X अङ्कभार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगत बहुउत्तर (Multiple Choice)	५० X २ = १००	४५ मिनेट

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२०	मौखिक

- लिखित परीक्षाको माध्यम भाषा अंग्रेजी वा नेपाली अथवा अंग्रेजी र नेपाली दुवै हुनसक्नेछ ।
- यथासम्भव पाठ्यक्रमका सबै एकाईहरूबाट प्रश्नहरू सोधिनेछन् ।
- वस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरूको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत २ (दुई) अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अर्थात् ०.४ अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरू परीक्षाको मिति भन्दा ३ (तीन) महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा रहेको सम्झनु पर्दछ ।
- लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अन्तर्वार्तामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति:-२०६६।१।२० गते देखि

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प्रथम श्रेणी, सिनियर इलेक्ट्रिसियन पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

**विषय- सेवा सम्बन्धी**

**1. Electrical Technology**

- 1.1 Electric current, Voltage, Resistance- definition, symbol, units and measurements, Types of electrical measuring equipments
- 1.2 The Electric Field- Basic phenomena, Laws of electric field, Capacitors
- 1.3 The magnetic field- Magnetic field Quantities, Field line patterns, Electro-magnetism, Inductance, Application of electro-magnetism
- 1.4 Direct Current Circuit, Electric circuit ,Series, parallel and mixed circuits, Ohm's Law, Kirchoff's first and second law, Electrical work, energy and power- definition, symbols , units and measurements, Heat produced by electric current, current density and fuse, Efficiency
- 1.5 A.C. Circuits- Alternating current generation, sinusoidal voltage, characteristic quantities such as instantaneous value, maximum and r.m.s. (effective)value, frequency; period and cycle; vector representation and phase angle, Ohmic resistance, inductive reactance, capacitance and impedance concept, symbol, unit, voltage and current characteristic in vector diagram, phase angle, their connections, AC power – active, reactive and apparent power and their calculation, power factor, Three phase current-application of single phase and three phase currents, generation of three phase current, connection of sources and loads in 3 phase system such as star and delta connection, power of a 3-phase system, the measurement of power, rotary field
- 1.6 Electrical Machines- Transformer, A.C. Motors, D.C. Motors, Generators-Working Principle, Construction and types
- 1.7 Selection of electric motors
- 1.8 Electrical supply and Distribution, Electrical Apparatus, Control and Protective Devices, Basic concept on electrical wiring, Earthing
- 1.9 Electrical Engineering Application- Electro-chemistry, Periodic system, chemical compounds and bounds, Conductance in fluids, electrolysis, Primary and secondary cells - construction, properties, mode of function and application connection of cells, Corrosion and its prevention
- 1.10 Maintenance and Safety- Repair and maintenance of electrical motors, control and protective devices, Safety use of electrical system – concept and safety rules & regulation First Aid in accident, steps to be taken in electrical accidents.

**2 Automobile Technology**

- 2.1 Wiring circuit in construction equipment and vehicle
- 2.2 Construction, function and maintenance of Automobile battery
- 2.3 Auto Ignition System- Components and their functions, Introduction to electronic ignition system
- 2.4 Auto charging system- Alternator, generator, regulator and cutouts
- 2.5 Automobile electric accessories and devices

## लोक सेवा आयोग

नेपाल इन्जिनियरिङ्ग सेवा, मेकानिकल समूह, निर्माण उपकरण संभार उपसमूह, राजपत्र अनंकित प्रथम श्रेणी, सिनियर इलेक्ट्रिसियन पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

### 3 Auto Electronics

- 3.1 Fundamentals in Applied Electronics- Semiconductor diode, Transistor: BJT, JFET, MOSFET, Thyristor
- 3.2 Basic Electronics Circuit, Introduction to binary system and binary calculations, Gates, truth tables, electric analogy of gates, Concept of memory, flip-flop, IC counters, decade counters, seven segment display
- 3.3 Digital Electronics, Half wave, full wave and bridge rectifiers, and filter, Amplifier and Op-amp, Regulated power supply, Difference amplifier, comparator, adder circuits
- 3.4 Sensing Devices, Mechanical sensors, Electrical sensors, Electronic Sensors, Magnetic sensors, Optical sensors, Thermal sensors,
- 3.5 Motor Control circuits, Servo-mechanism, Thyristor controlled DC motors, DC motor control by SCR, AC motor control using triac, Stepper motor, Motor control using PLC

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प्रथम श्रेणी, सिनियर इलेक्ट्रिसियन पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

### Model Questions

- 1** Heat produced in a circuit of resistance **R**, current flowing **I** during time interval **t** is given by  
a)  $I^2Rt$                       b)  $IR^2t$                       c)  $IRt^2$                       d)  $IRt$   
Ans: (a)
- 2** Thermal sensors are used to detect  
a) Flow of liquid              b) Heat                      c) Oil Pressure              d) Resistance  
Ans: (b)
- 3** Rectification means  
a) Converting alternating current (AC) to direct current (DC)  
b) Converting direct current (DC) to alternating current (AC)  
c) Making constant flow of direct current (DC)  
d) Making constant flow of AC current (AC)  
Ans: (a)
- 4** The difference between dynamo and alternator is  
a) Dynamo is motor and alternator is generator  
b) Dynamo is generator and alternator is motor  
c) Dynamo is DC generator and alternator is AC generator  
d) Alternator is DC generator and Dynamo is AC generator  
Ans: (c)
- 5** The Source of electrical energy for S.I. Engine ignition system can be  
a) Battery                      b) Magneto                      c) Both (a) and (b)              d) Fuel  
Ans: (c)