

श्री कार्यरथी विभाग भर्ना छनौट निर्देशनालय
जंगी अड्डा

प्राविधिक जमदार ईलेक्ट्रिकल (सै.ह.म.नि.) पद (खुला) को पाठ्यक्रम

समय : ३ घण्टा

पूर्णाङ्क : १००
उत्तीर्णाङ्क : ४०

उद्देश्यहरु:

यो पाठ्यक्रम नेपाली सेनाको प्रा.जम. मेकानिकल पदको उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । प्राविधिक जमदार पदका उम्मेदवार छनौटको लिखित परीक्षामा सरिक हुने उम्मेदवारहरुको पेशा सम्बन्धी विषयलाई आधार मानि प्रश्नहरु सोधिनेछन् ।

(क) लिखित परीक्षाको माध्यम नेपाली/अंग्रेजी भाषा हुनेछ ।

(ख) निम्न पत्रहरुको पाठ्यक्रमको रुपरेखाअनुसार विषयवस्तु हुनेछ ।

(ग) लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र अर्को चरणको परीक्षामा सम्मिलित गराइने छ ।

(घ) प्रश्नपत्र निर्माण गर्दा सम्भव भएसम्म पाठ्यक्रममा समावेश भएका सबै विषय समेटिने छ ।

(ङ) नेपाली सेनाको तत्कालीन आवश्यकता तथा विविध परिस्थितिमा नेपाली सेनाको अनुकूल हुने गरी उल्लेखित विवरणहरुमा हेरफेर हुन सक्नेछ ।

(च) पाठ्यक्रम लागू मिति : २०६९/०२/२४ गतेदेखि ।

| प्रश्नको किसिम | प्रश्न संख्या र अंक | कैफियत |
|------------------------------|---------------------|--------|
| लामो उत्तर दिनु पर्ने प्रश्न | ५ X १० = ५० | |
| छोटो उत्तर दिनु पर्ने प्रश्न | ५ X ५ = २५ | |
| वस्तुगत | २५ X १ = २५ | |

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1. **Engineering Mathematics**

Linear Algebra: Calculus: Differential equations: Complex variables: Probability and Statistics: Numerical Methods: Transform Theory:

2. **Materials and Components**

Structure and properties of Electrical Engineering Materials; Conductors, Semiconductors and Insulators, magnetic, Ferroelectric, Piezoelectric, Ceramic, Optical and Super-conducting Materials, Passive components and characteristics Resistors, Capacitors and Inductors; Ferrites, Quartz crystal Ceramic resonators, Electromagnetic and Electromechanical components,

3. **EM Theory**

Electric and magnetic fields, Gauss's Law and Amperes Law, Fields in dielectrics, conductors and magnetic materials, Maxwell's equations, Time varying fields, Plane-Wave propagating in dielectric and conducting media, Transmission lines,

4. **Electrical Materials**

Band Theory, Conductors, Semi-conductors and Insulators, Super-conductivity, Insulators for electrical and electronic applications, Magnetic materials, Ferro and ferri magnetism, Ceramics, Properties and applications, Hall effect and its applications, Special semi conductors,

5. **Electrical Circuits**

Circuits elements, Kirchoff's Laws, Mesh and nodal analysis, Network Theorems and applications, Natural response and forced response, Transient response and steady state response for arbitrary inputs, Properties of networks in terms of poles and zeros, Transfer function, Resonant circuits, Three phase circuits, Two-port networks, Elements of two-element network synthesis,

6. **Measurements and Instrumentation**

Units and Standards, Error analysis, measurement of current, Voltage, power, Power-factor and energy, Indicating instruments, Measurement of resistance, inductance, Capacitance and frequency, Bridge measurements, Electronic measuring instruments, Digital Voltmeter and frequency counter, Transducers and their applications to the measurement of non electrical quantities like temperature, pressure, flow-rate displacement, acceleration, noise level etc, Data acquisition systems, A/D and D/A converters,

7. **Electrical machines:**

Single phase transformer - equivalent circuit, phasor diagram, tests, regulation and efficiency; three phase transformers - connections, parallel operation; auto-transformer; energy conversion principles; DC machines - types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors; three phase induction motors - principles, types, performance characteristics, starting and speed control; single phase induction motors; synchronous machines - performance, regulation and parallel operation of generators, motor starting, characteristics and applications; servo and stepper motors,

8. Power systems

Types of power stations, Hydro, Thermal and Nuclear Stations, Power transmission lines, Modeling and Performance characteristics, Voltage control, Load flow studies, Optimal power system operation, Load frequency control, Symmetrical short circuit analysis, Symmetrical Components, Fault analysis, Transient and steady-state stability of power systems, Equal area criterion, Power system Transients, power system Protection Circuit breakers,

9. Communication Systems

Types of modulation; AM, FM and PM, Demodulators, Noise and bandwidth considerations, Digital communication systems, Frequency division and time division multiplexing.

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प्राविधिक जमदार ईलेक्ट्रिकल (सै.ह.म.नि.) प्रयोगात्मक परीक्षा
पाठ्यक्रम

समय : १ घण्टा
प्रश्नसंख्या : ५ वटा

पूर्णाङ्क : ५०
उत्तीर्णाङ्क : २५

1. General tools and measuring devices
 - a) Voltmeter, Ammeter, Ohmmeter, Multi-meter
 - b) Meggar
 - c) Pliers, Crimping tools, Wire gauge
2. Fault finding
 - a) Electrical circuit general condition checking
 - b) Continuity testing, Voltage measuring, Current measuring, Resistance measuring
 - c) Electrical circuit tracing
3. Maintenance safety
 - a) Splices, Wire stripping, Connector assembly
 - b) Terminal preparing
 - c) Grounding, Bonding, Shielding
4. Identification
 - a) Resistance color coding
 - b) Capacitors color coding
5. Identification and selection
 - a) Wires
 - b) Fuses
 - c) Circuit breakers
6. Electrical machines
 - a) Maintenance and testing
 - b) Safety precautions
 - c) Repair
 - d) Operation