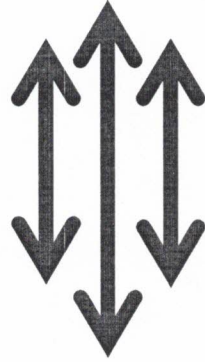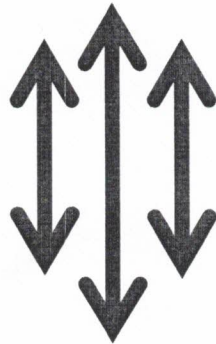# नेपाली सेना

श्री भर्ना छनौट निर्देशनालय, कार्यरथी विभाग, जंगी अड्डा

↑↑↑↓↓↓

प्रा.उ.से. ईलेक्ट्रिकल एण्ड ईलेक्ट्रोनिक्स ईन्जिनियर (खुला) पदको लिखित परीक्षाको पाठ्यक्रम

↑↑↑↓↓↓

२०७७

नेपाली सेना

प्रा.उ.से. ईलेक्ट्रिकल एण्ड ईलेक्ट्रोनिक्स ईन्जिनियर (खुला) पदको लिखित परीक्षाको पाठ्यक्रम

समय: ४ घण्टा   पूर्णाङ्क : १५०

उत्तीर्णाङ्क : ६०

यो पाठ्यक्रम नेपाली सेनाको प्रा.उ.से. ईलेक्ट्रिकल एण्ड ईलेक्ट्रोनिक्स ईन्जिनियर (खुला) पदका उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सरिक हुने उम्मेदवारहरुको पेशा सम्बन्धी विषयलाई आधारमानी प्रश्नहरु सोधिने छ ।

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

(ख) लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र अर्को चरणको परीक्षामा सम्मिलित गराईनेछ ।

(ग) प्रश्नपत्र निर्माण गर्दा पाठ्क्रममा समावेश भएका सबै विषयहरुलाई यथासंभव समिटनेछ ।

(घ) बस्तुगत र विषयगत संयुक्त रुपमा पूर्णाङ्क र उत्तीर्णाङ्क कायम गरिनेछ ।

(ङ) बस्तुगत र विषयगत परीक्षाको पाठ्यक्रम एउटै हुनेछ ।

(च) बस्तुगत र विषयगत विषयको लिखित परीक्षा एकैपटक वा छुट्टाछुट्टै गरी लिन सकिनेछ ।

(छ) यो पाठ्यक्रम मिति २०७७/०६/०७ गतेबाट लागु हुनेछ ।

लिखित परीक्षाको योजना र पाठ्यक्रम

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या अङ्क	समय
पेशा सम्बन्धी	७५	६०	बस्तुगत (Objective)	बहु वैकल्पिक प्रश्न (MCQs)	७५ प्रश्न x १ अङ्क=७५	१ घण्टा
	७५		विषयगत (Subjective)	छोटो उत्तर	७ प्रश्न x ५ अङ्क =३५	३ घण्टा
				लामो उत्तर	४ प्रश्न x १० अङ्क =४०	

नेपाली सेना
प्रा.उ.से. ईलेक्ट्रिकल एण्ड ईलेक्ट्रोनिक्स ईन्जिनियर (खुला) पदको पाठ्यक्रम

1. COMPUTER PROGRAMMING

Introduction to Computers, Problem Solving Using Computer, Introduction to C, Input and Output Statement, Control Statement and Structure of programs, Arrays, Modular Programming and Subprograms, Data file, Data Structures, Structured Programming, Programming Projects and Software Management

2. ELECTRIC CIRCUIT

Circuit Elements, Series and Parallel Circuits, Kirchoff's Laws, Network Analysis Theorem, Single phase AC Circuit Analysis, Power and Energy in AC Circuit, Three Phase Circuit Analysis, Matrix Methods in Network Analysis, Solution of differential equations with constant coefficient, Complete Time Domain Response of Second and Higher order Systems, Use of Laplace Transform Techniques for solution of Ordinary Differential Equations with constant coefficients, Transfer Functions, Poles and zeros of Networks, Frequency Response of Network, Fourier Series and Transform, two port Parameters of network, State Space Analysis.

3. ELECTRICAL ENGINEERING MATERIAL

Theory of metals, Free electron Theory of conduction in metals, conduction in liquids and gas, Dielectric Materials, Magnetic Material, Semiconduction Methods

4. SEMI CONDUCTOR DEVICES

Linear device models, Two Terminal Nonlinear Devices, The Junction Field Effect Transistor, a Three Terminal Nonlinear Device, The Bipolar Transistor, a Three Terminal Nonlinear Device, The Metal oxide semi conductor Transistor, a Three Terminal Nonlinear Device, Switching Circuits, The Operational Amplifier .

5. LOGIC CIRCUIT

Number System, Digital Design Fundamental, Digital System Building Blocks, Combinational Digital System, Sequential Digital System, Sequential Machines: Synchronous and Asynchronous Machines, Digital Design Examples .

6. ELECTRONICS CIRCUIT

Integrated Circuit Technology and Device Models, Operational Amplifier Circuits, Operational Amplifier Characteristics, Power Supply and Voltage Regulators, Untuned and tuned Power Amplifiers, Oscillator Circuits.

7. MICRO PROCESSORS

Introduction to Computer Architecture, Computer Instructions Assembly Language Programming, Microcomputer System, Interrupt Operations, Stacks, Push and pull Instruction, Static and Dynamic Variables Allocations, RISC and CISC Architecture, DSP Processors.

8. ELECTROMAGNETICS

Electrostatic Fields in Free Space, Gauss's law in Integral Form **and Applications,** Concept of Divergence, Electric Energy and Potential, Electrostatic Fields in Material Media, Boundary Value Problems in Electrostatics, Current and Current Density, Time Invariant Magnetic Fields, Concept of Curl, Magnetic Forces and Torque, Quasi-Static Fields, Electrodynamic Fields, Wave Equations Retarded Potentials, Transmission Lines

9. INSTRUMENTATION

Instrumentation System, Theory of Measurements, Transducers Electrical Signal Processing and transmission, Non-Electrical Signal Transmission, Analog-Digital and Digital-Analog Conversion, Digital Instrumentation, Output devices: Plotters, recorders, meters, Analytical and Testing Instrumentation, Microprocessor Based Instrumentation Systems, Data Acquisition Systems, Transmission and Telemetry of Data

10. ELECTRIC MACHINES

Magnetic Circuit Concepts, Transformer, Principles of Electromechanical Energy Conversion, General Aspects of Modeling and Steady State performance of DC machines, DC Motors DC Generators, Control of DC Machines in the steady state, Induction Machines, Synchronous Machines, Materials Used in Electrical Equipment, Review of Heat Transfer, Heating and Cooling of Electrical Machines, Design Process, Transformer Design, DC Machine Design, Three Phase Induction Motor Design

11. POWER SYSTEM ANALYSIS

Three Phase Power System, Generating Plants, Transmission System , Distribution System, Power System Load Flow Study, Power System Stability, Introduction to Power System Protection

12. CONTROL SYSTEMS

Component Modeling, Linearization, System Transfer Functions and Responses, Stability, Root Locus Method, Frequency Response Methods, Performance Specifications for Control System, Compensation and Design

13. HYDROPOWER

Kinematics and Dynamics of Fluid flow, Hydraulic Structures for Power Plants, Turbines for Electric Power Generations, Hydraulic pump, Basic Layout of hydro power plants, Elements of Hydrology in Nepal

14. POWER SYSTEM CONTROL AND PROTECTION

Fault Calculation, Principles of Power System Protection, Fuses, Isolators and Contactors, Circuit Breakers, Current and potential Transformers, Earthing and Protection Against Over Voltages Relay and Protection Schemes, Power / Frequency Control, Voltage and Var Control

15. POWER PLANT DESIGN

Energy Sources, Electric Power Generation, Integrated System Planning, Power Plant Design

16. INDUSTRIAL ELECTRIFICATION

Writing layouts for industrial building, Design of electrical heating systems, Design of lighting systems, Sound and communication system for industrial plants, Electrical requirements for drives for traction systems, lifts, conveyor belt and other materials and personnel moving system within buildings and plants, Total energy concept and energy conservation in industrial and commercial plants, Emergency and back up electrical supplier for industrial plants

17. DIGITAL CONTROL SYSTEMS

Introduction to Discrete-Time Control Systems, The Z-Transform, Z-Transform Methods for Analysis of Control Systems, Design and Compensation of Discrete-Time Control Systems, Discrete-Time State Equation

18. POWER ELECTRONICS

Power Electronic Devices, Single phase ac to dc conversion, Three phase ac to do conversion, Single phase and three phase de to ac conversion, Power electronic applications in motor control, HVDC power transmission

19. POWER PLANT EQUIPMENT

Hydro Plants, Diesel Power Plants, Combustion turbine Power Plants, Steam power plants, Combined Cycle Plants, General considerations

20. SAFETY ENGINEERING

Effects of non-ionizing electromagnetic fields on humans, Electrical shock hazards, Earthling and shielding techniques for electrical equipment, Electrical induction into communication and other systems near transmission lines, Lightning Protection, Chemical and Radiation hazards, Fire hazards and fire fighting techniques in electrical equipment

21. HIGH VOLTAGE ENGINEERING

High stress electric fields, Introduction to high voltage testing, High voltage aspects of terminal station equipment, High voltage transmission lines, High voltage Power cables

22. TRANSMISSION AND DISTRIBUTION DESIGN

Characteristics of electrical loads, Distribution Systems Design, Essentials of Surveying and Map Reading, Transmission Systems

23. COMMUNICATION SYSTEMS Analog and Digital Communication Systems, Representation of Communication Signals and system, Continuous Wave Linear Modulators, Demodulators for Linear Modulation, Frequency Modulation and Phase Modulation, Frequency Division Multiplexing systems, Spectral Analysis, Introduction to Digital Modulation Techniques, Digital Communication Systems, Pulse Modulation systems, Digital Data Communication Systems, Representation of Random Signals and Noise in Communication Systems, Noise Performance

माथि उल्लेखित पाठ्यक्रमका एकाइहरुबाट सोधिने प्रश्नहरुको संख्या निम्नानुसार हुनेछ

विषय	परिक्षा प्रणाली			कै
	वस्तुगत (Objective)	विषयगत (Subjective)		
	बहु बैकल्पिक प्रश्न (MCQS) (प्रश्न x अंक)	छोटो उतर (प्रश्न x अंक)	लामो उतर (प्रश्न x अंक)	
1	4x1			
2	3x1	1x5		
3	2x1			
4	2x1		1x10	
5	2x1			
6	3x1	1x5		
7	3x1			
8	2x1			
9	2x1	1x5		
10	3x1		1x10	
11	4x1	1x5		
12	3x1			
13	3x1			
14	2x1	1x5	1x10	
15	3x1			
16	4x1			
17	4x1			
18	4x1	1x5		
19	4x1			
20	4x1		1x10	
21	4x1	1x5		
22	5x1			
23	5x1			
Total	75 x 1 = 75	7 x 5 = 35	4 x 10 = 40	

प्रयोगात्मक परीक्षाको पाठ्यक्रम

समयः ६० मिनेट

पूर्णाङ्कः ५०

उत्तीर्णाङ्कः२५

S.N.	Topic	Marks	Time (Minutes)
1	Paper simulation	15	15
2	Component Identification and it's application	10	10
3	Use Of Various Measuring Instrument	10	10
4	Fault Finding	10	15
5	Viva	5	10
	Total	**50**	**60**

समास