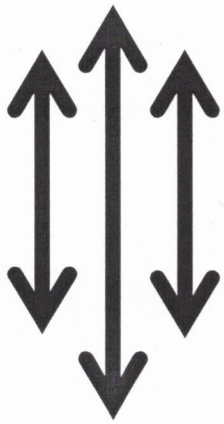
नेपाली सेना

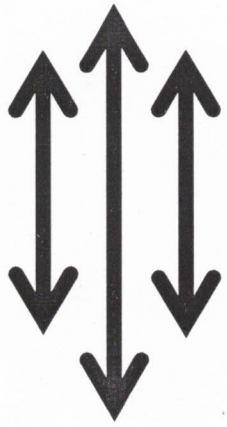
श्री भर्ना छनौट निर्देशनालय कार्यरथी विभाग

जंगी अड्डा



प्रा.उ.से ईलेक्ट्रोनिक्स ईन्जिनियर (खुल्ला) पदको लिखित परीक्षाको

पाठ्यक्रम



२०७८

नेपाली सेना

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

समयः ४ घण्टा १५ मिनेट

पुर्णाङ्कः१५०
उत्तीणङ्कः६०

यो पाठ्यक्रम नेपाली सेनाको प्रा.उ.से. ईलेक्ट्रोनिक्स ईन्जिनयर (खुला) पदका उम्मेदवार छनौट परिक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सरिक हुने उम्मेदवारहरुको पेशा सम्बन्धि 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 गराईने छ ।

(ग) प्रश्नपत्र निर्माण गर्दा पाठ्यक्रममा समावेश भएका सबै विषयहरुलाई यथासंभव समेटिनेछ

(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 २०७८/०५/१५ गतेबाट लागु हुनेछ ।

लिखित परीक्षाको योजना र पाठ्यक्रम

विषय	पुर्णाङ्क	उत्तीणङ्क	परीक्षा प्रणाली		प्रश्न संख्याxअंङ्क	समय
पेशा सम्बन्धी	७५	६०	वस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	७५ प्रश्न x १ अंङ्क = ७५	१ घण्टा १५ मिनेट
	७५		विषयगत (Subjective)	छोटो उत्तर	७ प्रश्न x ५ अंङ्क = ३५	३ घण्टा
				लामो उत्तर	४ प्रश्न x १० अंङ्क = ४०	

नेपाली सेना

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

1. 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.

2. ELECTRICAL ENGINEERING MATERIAL

Theory of metals, Free electron Theory of conduction in metals, conduction in liquids and gas, Dielectric Materials, Magnetic Material, Semi-conducting Materials

3. SEMI CONDUCTOR DEVICES

Linear device models, Two Terminal Nonlinear Devices, Three Terminal Nonlinear Device, The Bipolar Transistor, FET, MOSFET, JFET, DEMOSFET , Switching Circuits, The Operational Amplifier .

4. 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.

5. LOGIC CIRCUIT

Number System, Digital Design Fundamental, Digital System Building Blocks, Combinational Digital System, Sequential Digital System, Combinational circuit: half adder, full adder comparator, multiplexer, demultiplexer, encoder, decoder, Digital to Analog conversions, Analog to digital conversions, Types of memories, Core and semiconductor memories, RAM, ROM, PROM, DRAM, EEPROM etc address decoding and selection ROM etc

6. 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.

7. 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

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, DC machines, DC Motors DC Generators, Control of DC Machines, Induction Machines, Synchronous Machines, Transformer Design, DC Machine Design, Three Phase Induction Motor

11. CONTROL SYSTEMS

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

12. 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

13. INDUSTRIAL ELECTRIFICATION

Writing layouts for industrial building, Design of lighting systems, Sound and communication system for industrial plants, Total energy concept and energy conservation in industrial and commercial plants, Emergency and back up electrical supplier for industrial plants

14. SAFETY ENGINEERING

Effects of non-ionizing electromagnetic fields on humans, Electrical shock hazards, Earthing and shielding techniques for electrical equipment, Lightning Protection, Chemical and Radiation hazards, Fire hazards and fire fighting techniques in electrical equipment

15. 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 StateEquation

16. POWER ELECTRONICS

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

17. 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 ,Antenna system, Radiation pattern, Mode of propagation, Super heterodyne Transceiver , BER, Compression and decompression of data , Pulse Coding

माथी उल्लेखित पाठ्यक्रमका एकाइहरुवाट सोधिने प्रश्नहरुको संख्या निम्नानुसार हुनेछ

विषय	परिक्षा प्रणाली			कै
	वस्तुगत (Objective)	विषयगत (Subjective)		
	वहुवैकल्पिक प्रश्न (MCQ) (प्रश्न X अंक)	छोटोउत्तर (प्रश्न X अंक)	लामो उत्तर (प्रश्न X अंक)	
1	5x1	1x5	1x10	
2	4x1			
3	5x1			
4	5x1			
5	4x1	1x5		
6	5x1			
7	4x1			
8	4x1	1x5	1x10	
9	4x1			
10	4x1			
11	4x1	1x5		
12	3x1			
13	4x1		1x10	
14	4x1	1x5		
15	4x1			
16	4x1			
17	8x1	2x5	1x10	
Total	75 x 1 = 75	7 x 5 = 35	4 x 10 = 40	

प्रयोगात्मक परिक्षाको 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**