नेपाली सेना
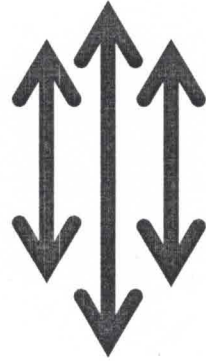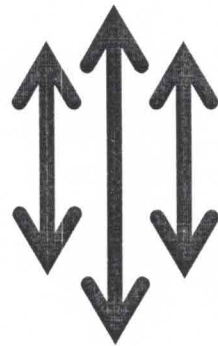## श्री भर्ना छनौट निर्देशनालय, कार्यरथी विभाग,
जंगी अड्डा

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

२०७७

नेपाली सेना
प्रा.उ.से. ईलेक्ट्रोनिक्स ईन्जिनियर (आन्तरिक) पदको लिखित परीक्षाको
पाठ्यक्रम

समय: ४ घण्टा

पूर्णाङ्क : १५०
उत्तीर्णाङ्क : ६०

　　　यो पाठ्यक्रम नेपाली सेनाको प्रा.उ.से. ईलेक्ट्रोनिक्स ईन्जिनियर (आन्तरिक) 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 २०७७/०६/०६ 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. ईलेक्ट्रोनिक्स ईन्जिनियर (आन्तरिक) पदको लिखित परीक्षाको पाठ्यक्रम
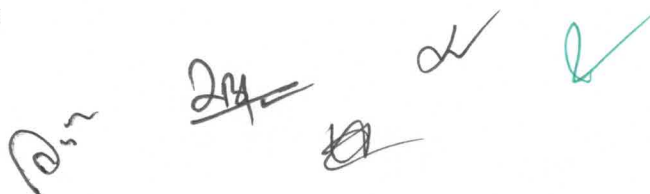
1. INSTRUMENTATION

1.1. Introduction:Measurement and error, accuracy and precision, sensitivity, resolution, types of error

1.2. Measurement of voltage and current: Working Principle, connection of voltmeter and ammeter

1.3. Wave form generators and analyzers: Basic principle signal generation (Square Wave, Pulse Wave, Sinusoidal Wave etc) Function, Generation, Spectrum analyzers

1.4. Signal Measurements: Advantage of Digital Instrument over analog, analog to digital convertor (ADC), digital to analog converter (DAC), Principle of digital volt meter, ramp type differential volt meter (DVM), integrating DVM, continious balance DVM, various displays (CRT, LCD, LED)

2. BASIC ELECTRICAL

2.1 Introduction of electric Charge, current, potential difference, electromotive force, AC and DC sourse

2.2 Resistive circuits:Series/ Parallel Connection of Resistors, open and short circuit.

2.3 Basic Principle of electricity and magnetism :Concept of electricity, magnets and their types

2.4 Passive circuites elements :Resistor, inductor, Capacitors, electromagnetic relay

2.5 Kirchoff's law:Kirchoff's Voltage and current law and their application

2.6 Ohm's Law and its application, ThevininsTheroem , NortenTheroem

2.7 Filter :Low pass filter and high pass filter

2.8 Transformer : Working Principle, type and application

3. COMMUNICATION SYSTEMS

3.1 Analog and Digital Communication Systems,

3.2 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,

3.3 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

4. SEMICONDUCTOR DEVICE

4.1 Conductors, Insulators and semiconductor (Intrinsic, extrinsic), P-type semi conductor, N-type semi conductor

4.2 P-N Junction diode, semi conductor diode, type of diode and their application (Normal and Zener diode), seven segment display, LED characteristic and application

4.3 Bipolar, Transistor, Metaloxide semiconductor, Transistor

5. ELECTRONIC CIRCUIT

5.1 Basic rectifiers circuit: Characteristic and applications

5.2 operational amplifiers

5.3 Feedback amplifiers

5.4 Oscillators

6. DIGITAL ELECTRONICS

6.1 Analog and digital signal

6.2 Number system: Binary, decimal, octal, hexadecimal

6.3 Basic and universal logic gates, OR, AND, NOT, NAND, NOR, XOR

6.4 Combinational circuit: half adder, full adder comparator, multiplexer, encoder, decoder

7. POWER ELECTRONICS

Basic and application of silicon controlled rectifier (SCR,DIAC, TRIAC), insulated gate, bipolar transistor (IGBT), Schottky diode

8. COMPUTER CONCEPT

8.1 Introduction to computer system

8.2 Problem solving using computer.

8.3 Communication network: LAN, MAN and WAN, transmission media (Twisted pair, co-axial and Optical fibre cable), router, switch and Gateway.

8.4 Introduction to C program & output statement, control statement &structure of programs, Arrays

8.5 Modular programming & sub-programs, Data files, Data structure, structured programming, programming project & software management.

9. MICROPROCESSORS

9.1 Introduction to Computer Architecture, Computer Instructions Assembly Language Programming,

9.2 Microcomputer System, Interrupt Operations, Stacks, Push and pull Instruction,

9.3   Static and Dynamic Variables Allocations, RISC and CISC Architecture, DSP Processors.

10. **ELECTROMAGNETICS**

10.1 Electrostatic Fields in Free Space, Gauss's law in Integral Form and Applications,

10.2 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,

10.3 Electro-dynamic Fields, Wave Equations Retarded Potentials, Transmission Lines

11. **CONTROL SYSTEMS**

11.1 Component Modeling, Linearization, System Transfer Functions and Responses, Stability,

11.2 Root Locus Method, Frequency Response Methods, Performance Specifications for Control System, Compensation and Design

12. **DIGITAL CONTROL SYSTEMS**

12.1 Introduction to Discrete-Time Control Systems

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

माथि उल्लेखित पाठ्यक्रमका एकाइहरुबाट सोधिने प्रश्नहरुको संख्या निम्नानुसार हुनेछ

विषय	परिक्षा प्रणाली			कै
	वस्तुगत (Objective)	विषयगत Subjective)		
	बहुबैकल्पिक प्रश्न (MCQS) (प्रश्न X अंक)	छोटो उतर (प्रश्न X अंक)	लामो उतर (प्रश्न X अंक)	
1	6x1	1x5	1 x 10	
2	6x1			
3	6x1	1 x 5		
4	6x1	1 x 5	1 x 10	
5	7x1	1x5		
6	6x1	1 x 5		
7	7x1			
8	6x1	1x5	1 X 10	
9	7x1			
10	6x1	1x5	1 x 10	
11	6x1			
12	6x1			
Total	75 x 1 = 75	7 x 5 = 35	4 x 10 = 40	

प्रयोगात्मक परीक्षाको पाठ्यक्रम

समय: ६० मिनेट   पूर्णाङ्क: ५०

उत्तीर्णाङ्क: २५

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

समाप्त