

नेपाली सेना
श्री भर्ना छनौट निर्देशनालय, कार्यरथी विभाग
जंगी अड्डा



प्रा.उ.से. एरोनोटिकल/मेकानिकल/इलेक्ट्रिकल/इलेक्ट्रोनिकस/एभियोनिकस
(आन्तरिक) पदको पेशा सम्बन्धी लिखित परीक्षा र प्रयोगात्मक परीक्षाको
पाठ्यक्रम योजना



२०७५

नेपाली सेना

प्रा.उ.से. एरोनोटिकल/मेकानिकल/इलेक्ट्रिकल/इलेक्ट्रोनिकस/एभियोनिक्स (आन्तरिक) पदको पेशा सम्बन्धी लिखित परीक्षा र प्रयोगात्मक परीक्षाको पाठ्यक्रम योजना

यो पाठ्यक्रम नेपाली सेनाको विभिन्न ईकाईहरूमा रिक्त रहेको प्रा.उ.से. एरोनोटिकल/मेकानिकल/इलेक्ट्रिकल/इलेक्ट्रोनिकस/एभियोनिक्स (आन्तरिक) पदका उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सहभागी हुने उम्मेदवारहरूको विविध विषय (अंग्रेजी, गणित, नेपाली र सामान्यज्ञान), पेशा सम्बन्धी विषय र पेशागत विषयको प्रयोगात्मक परीक्षाको लागि निम्न विषयहरूलाई आधार मानी प्रश्नहरू सोधिने छ ।

- (क) लिखित परीक्षाको माध्यम नेपाली/अंग्रेजी वा दुवै भाषा हुनेछ ।
- (ख) लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अर्को चरणको परीक्षामा सम्मिलित गराइने छ ।
- (ग) प्रश्न पत्र निर्माण गर्दा पाठ्यक्रममा समावेश भएका सबै विषयहरूलाई समेटिनेछ ।
- (घ) नेपाली सेनाको आवश्यकता तथा विविध परिस्थितिमा नेपाली सेना अनुकूल हुने गरी उल्लेखित विवरणहरूमा हेरफेर हुन सक्नेछ ।
- (ङ) वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- (च) वस्तुगत बहुवैकल्पिक पश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- (छ) विषयगत प्रश्न हुने पत्र/विषयका प्रत्येक भाग खण्ड/एकाइ/प्रश्नका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थी प्रत्येक भाग/खण्ड/एकाइ/प्रश्न प्रश्नको उत्तर सोही भाग/खण्ड/एकाइ/प्रश्नको उत्तर पुस्तिकामा मात्र लेख्नुपर्नेछ ।
- (ज) पाठ्यक्रमको रूपरेखा देहायमा उल्लेख गरे अनुसार हुनेछ ।
- (झ) पाठ्यक्रम लागू मिति २०७५/१०/२७ गतेदेखि ।

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पेशा सम्बन्धी विषयको लिखित परीक्षा योजना र पाठ्यक्रम

विषय	पुर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या x अङ्क	समय
पेशा सम्बन्धी	१००	४०	वस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	४० प्रश्न x १ अङ्क = ४०	२ घण्टा ३० मिनेट
			विषयगत (Subject)	छोटो उत्तर	६ प्रश्न x ५ अङ्क = ३०	
				लामो उत्तर	३ प्रश्न x १० अङ्क = ३०	

लिखित परीक्षाको पाठ्यक्रम

SECTION A: AERONAUTICAL PART

1. Basic Theory Of Flight:

- 1.1 Atmosphere: General Ideas on Different Layers of Atmosphere, Effects of Temperature Density and pressure in flight
- 1.2 International Standard Atmosphere (ISA), IAS, TAS, CAS, QNH, QFE and QNE
- 1.3 Airflow Around body; Laminar Flow, Turbulent Flow, Relative Air Flow; Vortices and Stagnation, Bernoulli's Theorem
- 1.4 Airfoil terminologies: Camber, Chord, Center of Pressure, Angle of Attack, Aspect Ratio, thrust, Weight, Aerodynamic Resultant, generation of Lift and Drag, Lift and Drag Coefficient, Angle of Incident, Pitch Angle
- 1.5 Aerodynamic Forces; Lift Augmentation

2. Flight Stability And Dynamics;

- 2.1 longitudinal Lateral And Directional Stability
- 2.2 Three Axis of Flight; Roll Pitch and Yaw
- 2.3 High Speed Flight
 - 2.3.1 Concept for Subsonic Transonic and Supersonic Flight and Mach number

3. Flight Controls

- 3.1 Primary and Secondary

4. Aircraft Structure:

- 4.1 Structural Classification, Primary Secondary and Tertiary
- 4.2 Construction; Fuselage, Formers, Stringers, Longerons, Bulkhead, Frames, Empennage and Engine attachment, Wings, Ribs and Spar

5. Aircraft System:

- 5.1 Fuel System
- 5.2 Hydraulic System
- 5.3 Basic concept of Oil system Fire Protection System and Anti-Icing System

6. Engine:

- 6.1 Types of Engine: Turbojet, Turbofan, Turbo shaft and Turboprop

6.2 Components of Engine:

- 6.2.1 Air Inlet
- 6.2.2 Compressor
- 6.2.3 Combustion Chamber and its Types
- 6.2.4 Free Turbine and Fixed Turbine
- 6.2.5 Nozzle Guide Vane, Causes and effects of turbine Blades stress and creep
- 6.2.6 Exhaust: Convergent and Divergent
- 6.2.7 Engine Starting System: Air Starter, Electric Starter And Cranking

7. Aviation Management

- 7.1 Concept of routine, planned, preventive, corrective and predictive maintenance
- 7.2 Aircraft documentation: Log card, maintenance manuals, IPC and service bulletins, TBO & TSN of aircraft components

SECTION B: MECHANICAL PART

1. Workshop Technology

- 1.1. Concepts of stress and strain, Stress-strain relationship, Hooks law and modulus of Materials, mechanical properties of metals: strength, elasticity, ductility and malleability, Creep and fatigue
- 1.2. Testing of material: NDT
- 1.3. Ferrous metals and alloy
- 1.4. Special alloys and steel: stainless steel and high speed steels, Cutting alloys
- 1.5. Aluminum and its alloys: durallium
- 1.6. Copper : Brass and bornze
- 1.7. Heat treatment of metals : annelling, quenching, normalizing and hardening
- 1.8. Mechanical Working: Hot working, rolling , forging, drawing
- 1.9. Purposes of hand tools and machine tools
- 1.10. Measuring tools:
 - 1.10.1. Linear Measurement: Steel Rule, Calipers, Divider, Depth Gauge, Micrometer, Vernier Caliper, Height Gauge
 - 1.10.2. Angular Measurements: Protractor, Clinometers
 - 1.10.3. Gauges: Go and No Go Gauge, Feeler Gauge and Plate Gauge
- 1.11. Limits and Fits
 - 1.11.1. Concept of Interchangeability
 - 1.11.2. Size and Limits of Size: Basic, Nominal , Actual Size; Max and Min Limit
 - 1.11.3. Types of Fit
- 1.12. Welding Technology
 - 1.12.1. Arc welding
 - 1.12.2. Oxyacetylene welding
- 1.13. Lathe machine
 - 1.13.1. Sizing of a lathe machine
 - 1.13.2. Main parts of lathe machine
 - 1.13.3. Operations: turning, chamfering, thread cutting, knurling, filing, boring
- 1.14. Drilling machine operation

- 1.14.1. Drilling, reaming, boring, counter boring, tapping, countersinking
- 1.15. Gear System
- 1.15.1. Gear Drives: Spur Gear, Bevel Gear, Rack and Pinion Gear (Only Concept)
- 1.15.2. Types of Gear Trains: Simple and Compound

SECTION C: AVIONICS PART

1. Avionics

1.1 Aircraft Avionics, Electrical and Instrument system

1.1.1 Avionics Fundamentals:

General radio principle, Ground, sky and space waves. Basic radio components, communication radio VHF and HF, Navigational system, ELT, FDR,CVR, weather radar, Radio altimeter.

1.1.2 Autopilot and Flight Directors

Types of Autopilot and its operation. Basic components of autopilot system. Basic understanding of stability and augmentation in helicopter.

1.1.3 Installation and Maintenance of Avionics components

Cleaning of avionics equipment. Wire routing techniques. Bonding and shielding. Static discharger installation methods and precaution. Identification of ESDS (Electro static discharge sensitive) parts and understanding its prevention techniques.

1.1.4 Aircraft Instruments

Air data instruments, Navigation instruments, Engine instruments, Fuel quantity indicating system, Transmission and hydraulics instrument.

1.1.5 Aircraft Electrical system

Different sources of electrical power to aircraft, Distribution and protection system for electrical power. wire and types, understanding of wire marking, types of connectors, understanding of switch, relays, solenoids, fuse, circuit breaker. Aircraft interior and exterior lights. Maintenance and inspection of interior and exterior light, Maintenance and inspection of alternators, DC motor and generator.

Section	Unit	Weightage	MCQ	Short Q&A	Long Q&A
Aeronautical 50%	1-2	15	5X1	-	1X10
	3-4	10	5X1	1X5	-
	5	10	5X1	1X5	-
	6	10	5X1	1X5	-
	7	5	5X1	-	-
Mechanical 25%	1	25	10X1	1X5	1X10
Avionics 25%	1	25	5X1	2X5	1X10
Total		100	40 Q X 1 Mark 40 Mark	6 Q X 5 Mark 30 Mark	3 Q X 10 Mark 30 Mark

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पेशागत विषयको प्रयोगात्मक परीक्षा पाठ्यक्रम

समय : १ घण्टा

पूर्णाङ्क : ५०

उत्तीर्णाङ्क : २५

1. Identification of Hand tools, bench tools, Special tool, measuring tools and their practical uses: (20)
2. Avionics (Identification of instruments and their practical uses): (10)
 - 2.1. Voltmeter
 - 2.2. Multimeter
 - 2.3. Circuit
 - 2.4. Megger
 - 2.5. Insulation Tester
3. Maintenance safety and support equipment: (5)
 - 3.1. Fire extinguisher and its types
 - 3.2. Ground equipment
 - 3.3. Aircraft safety
 - 3.4. Workshop safety
 - 3.5. Personnel safety
4. Aircraft Documentation: (15)
 - 4.1. IPC
 - 4.2. Aircraft maintenance manual
 - 4.3. Log book
 - 4.4. Log card
 - 4.5. Service Bulletin.