

नेपाली सेना

प्रा.अम. ईन्स्ट्रुमेन्ट (Instrument) (खुला र आन्तरिक) पदको
पेशा सम्बन्धी विषयको लिखित परीक्षा योजना र पाठ्यक्रम

समय : २ घण्टा ३० मिनेट

पूर्णाङ्क : १००

उत्तीर्णाङ्क : ४०

यो पाठ्यक्रम नेपाली सेनाको विभिन्न ईकाईहरूमा रिक्त रहेको प्रा.अम. ईन्स्ट्रुमेन्ट (Instrument) (खुला र आन्तरिक) पदका उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सरिक हुने उम्मेदवारहरूको पेशा सम्बन्धि विषयलाई आधारमानी प्रश्नहरू सोधिने छ ।

- (क) लिखित परीक्षाको माध्यम नेपाली/अंग्रेजी वा दुवै भाषा हुनेछ ।
- (ख) लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अर्को चरणको परीक्षामा सम्मिलित गराईने छ ।
- (ग) प्रश्न पत्र निर्माण गर्दा पाठ्यक्रममा समावेश भएका सबै विषयहरूलाई समेटिनेछ ।
- (घ) नेपाली सेनाको आवश्यकता तथा विविध परिस्थितमा नेपाली सेना अनुकूल हुने गरी उल्लेखित विवरणहरूमा हेरफेर हुन सक्नेछ ।
- (ङ) पाठ्यक्रमको रूपरेखा देहायमा उल्लेख गरे अनुसार हुनेछ ।
- (च) पाठ्यक्रम लागु मिति : २०७४/०२/२२ गतेदेखि ।

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प्रा.अम. ईन्स्ट्रुमेन्ट (Instrument) (खूला र आन्तरिक) पदको पेशा सम्बन्धी विषयको लिखित परीक्षा योजना र पाठ्यक्रम

विषय	पूर्णाङ्क	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 (Subjective)	छोटो उत्तर	१५ प्रश्न X २ अङ्क = ३०	
				लामो उत्तर	६ प्रश्न X ५ अङ्क = ३०	

प्रा.अम. ईन्स्ट्रुमेन्ट (Instrument) (खूला र आन्तरिक) पदको पेशा सम्बन्धी विषयको पाठ्यक्रम

Unit -1

1.1 OPTICS

Introduction & Branches of optics

1.2 LIGHT

Introduction, Theory of light, Visible Spectrum, The pin hole of Camera, Media, Light Transmission, Illumination and photometry, Shadow, Different causes shadow formation

1.3 REFLECTION PLANE SURFACE

Introduction, Type of reflection, Laws of reflection, Terms used in reflection

1.4 REFRACTION AT CURVE SURFACES

Introduction, Laws of refraction, Refractive Index, Critical Angle, Total Internal reflection & Mirage

1.5 DISPERSION OF LIGHT

Introduction & Construction

1.6 IMAGE

Introduction, Type of Image, Image Distance & Object Distance

1.7 MIRROR

Introduction, Type of Mirror, Characteristic of plane mirror, Terms used in plane mirror, Image formation by plane mirror, Image formed by concave mirror, Image formed by convex mirror, Formula of a concave mirror & plane mirror & Deviation of the reflected ray by rotating mirror

1.8 LENS

Introduction, Types, Terms, Image formation by convex Lens, Image formation by Concave Lens, Formula for convex Lens & Concave Lens, Power of Lens, Magnification & Field of View

1.9 PRISM

Introduction, Use, Types of Prism & Maximum angle deviation

1.10 STEREOSCOPIC VISION

Basic Optical System, Binocular, Monocular, Split Binocular

1.11 HUMAN EYE

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Introduction ,Working Principle, Accommodation, Far Point, near Point, Defect of Vision, Short Sight (Myopia), Long Sight (Hypermetropia), Far Sight (Pressbyopia)

1.12 **ABERRATION**

Introduction & Types

1.13 **OPTICAL INSTRUMENT**

Introduction, Optical Layout of Basic Optical Instrument, Function of Optical Component), Periscope

1.14 **MICROSCOPE**

Introduction & Types

1.15 **TELESCOPE**

Introduction, Types, Reflecting Telescope, Refracting Telescope, Types of refracting telescope, Galilean Telescope, Astronomical Telescope, Terrestrial Telescope, Prismatic Telescope, Basic Test and Adjustment

1.16 **FIBER OPTICS**

Introduction & Application of fiber optics

1.17 **LASER**

Introduction, Generation

Unit -2

2.1 **FIRE CONTROL INSTRUMENT**

Introduction

2.2 **SIGHT HEAVY MORTAR**

Introduction, Technical data, Components of sight heavy mortar, Construction, Optical layout, Function of optical component, Special feature, Test & Adjustment

2.3 **DIAL SIGHT NO. 9 MK-1**

Introduction, Components, Construction, Optical layout, Function of optical component, Special feature, Test & Adjustment

2.4 **DIAL SIGHT NO. 102A**

Introduction, Technical data, Construction, Optical layout and its function, Different between Dial sight No. 9 and Dial sight 102A

2.5 **MOUNT DIAL SIGHT NO. 103A**

Introduction & Construction

2.6 **DIAL SIGHT NO. 104A**

Introduction, Technical data, Name of parts, Construction, Optical layout, Function of optical components, Test & Adjustment

2.7 **TELESCOPE SIGHT 106A**

Technical data, Optical layout, Function of optical components, Test & Adjustment

2.8 **DIAL SIGHT L1 A1**

Introduction, Requirement, Parts of dial sight carrier & dial sight

2.9 **L1 A1 SIGHT TELESCOPE AND TELESCOPE SUPPORTING**

Introduction & Name of their parts

2.10 **AIMING POINT**

Introduction, Components name, Operating procedure & Zeroing

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2.11 TELESCOPE SIGHT 84MM CARL GUSTAV

Introduction, Range setting knob, Range drum & Temperature correction knob

2.12 SIGHT TELESCOPE OF 40MM RL

Introduction, Construction, Optical layout & Graticule

2.13 SIGHT TEST FOR 120MM BRAND MORTAR

Aim, Requirement, Preparation, Field clinometers test, Index error, Cross bubble test, Elevation test & Alignment test

2.14 Sight test for 75/24mm pack howitzer

Requirement, Preparation, Field clinometers test, Index error, Test and adjustment of cross level, Test and adjustment of sight mount pivot (Trunion level), Test and adjustment of set TE scale, Angle of sight (TE) of back lash and adjustment, To test the elevation, Alignment test, to test the zero of the sight (Coul), Known angle test

2.15 Sight test for 105mm pack howitzer

General, Test and adjustment the field clinometers, To test and adjustment the longitudinal bubble, To test the cross level bubble, To replace & adjust a spirit bubble, To test and adjust the TE scale, Alignment test, To test and adjustment of dial sight for line, Test and adjustment of dial sight for elevation

2.16 Sight test for LFG (Light Field Gun)

Unit -3

3.1 ANGLE MEASURING INSTRUMENT & CARE AND PRESERVATION

Introduction

3.2 COMPASS

Introduction, Types of compass, Construction of compass, Spare parts of liquid compass, Spare parts of dry compass, Damping force, Accuracy of compass, General repair, Method of refill, To refill the compass & During refill

3.3 FIELD CLINOMETERS

Introduction, Parts name and Use

3.4 BINOCULAR

Introduction of binocular, Inspection and examination, Optical layout of binocular No-2, Function of optical component, Test and adjustment

3.5 BINOCULAR CAT EYE

Introduction, Use & Operating Procedure

3.6 BINOCULAR ZOOM

Introduction, Use & Operating Procedure

3.7 SIGHT CLINOMETERS MK-IV

Introduction, Use, Construction, Gun level & Maintenance

3.8 DIRECTOR

Introduction, Use, Basic requirement and general, Optical layout & Function of optical component

3.9 THEODOLITE

Introduction, Use, Types of theodolite, & Optical layout

3.10 AIMING CIRCLE PAB-2 (VS/IOS5536A)

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Introduction & Optical layout

3.11 RANGE FINDER (1METER)

Introduction, Use, Coincidence principle of range finder, Optical layout and their function

3.12 AUXILIARY TELESCOPE NO-2MK 1A AND MK1B

Introduction, Use of auxiliary telescope & Optical layout of AT

3.13 WORKSHOP COLLIMATOR NO-2 MK-1

Introduction & General description

3.14 COLLIMATOR SMALL GENERAL PURPOSE

Introduction, Use & General description

3.15 COLLIMATOR BINOCULAR MK-4

Introduction, Use , General description, Test and adjustment , Optical layout of Bino collimator Mk-IV

3.16 COLLIMATOR INDIAN PATTERN

General description, Use & Optical layout

3.17 Collimator infinity aiming reference 102A

General description & Bacon prism cased 1A

3.18 BUBBLES

Introduction and Types of bubble

Unit -4

4.1 NVD AND IR DEVICE

Extended solar spectrum, Characteristics of IR radiation, Feature of IR, Electromagnetic spectrum, Wave Length of IR radiation, Levels of illumination, Uses of IR & Source of IR

4.2 GLOSSARY TERMS USED IN NVD

4.3 CATADIOPTRIC OG

Introduction, Optical layout & Advantages

4.4 NIGHT VISION

Introduction, Types & use

4.5 ACTIVE DEVICE

Introduction, Principle of active IR device, Advantages, Disadvantages & Image Converter Tube

4.6 PASSIVE DEVICE

Introduction, Low light level technology, Block Diagram of PNVD, Description of block diagram, Block diagram of II tube, Name of parts II tube , Micro channel plate (MCP) & Types of II tube

4.7 THERMAL IMAGING

Principle of thermal imaging, Elements of TI system, Dewar Detector Cooler (DDC), Name of parts, Feature & Application

4.8 HHTI (ELOP)

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Introduction, Technical data, Accessories, Contains of Logistic Container, Contains of caring pack, Re-chargeable battery and battery charger, Charging procedure, Mounting procedure HHI on tripod, System teardown, Components , Operating procedure, Control & Indicators

4.9 AN/PVS-7B OR 7D NIGHT VISION GOGGLES

Introduction , Technical data, Description of components , Accessories, Main Assay, Mechanical Function & Optical Layout

4.10 KITE AND MAXI KITE WEAPON SIGHT

Introduction, Technical Data, Accessories, Control & Indicators, Initial Inspection, Operating Procedure & Zeroing

4.11 BINOCULAR NIGHT VISION PASSIVE LIGHT WEIGHT

Introduction, Technical data, Main Assay Accessories, Operating Procedure

4.12 AN/PVS-4 NIGHT VISION WEAPON SIGHT (2151WS)

Introduction, Technical data, Accessories, Control & Indicators, Optical Layout, Reticule pattern & Zeroing

4.13 BINOCULAR NIGHT VISION PASSIVE 101A

Introduction, Technical data, Accessories & Operating Procedure

यस पेशा सम्बन्धी विषयको पाठ्यक्रमका एकाईहरुबाट सोधिने प्रश्नहरुको संख्या निम्नानुसार हुनेछ ।

एकाइ नं. (Unit No.)	अङ्कभार (Weightage)	बहुवैकल्पिक प्रश्न (MCQs) को संख्या	छोटो उत्तर प्रश्नको संख्या	लामो उत्तर प्रश्नको संख्या
1.	16	6	१५ प्रश्न X २ अङ्क	६ प्रश्न X ५ अङ्क
2.	30	12		
3.	24	10		
4.	30	12		
जम्मा	100	४० प्रश्न X १ अङ्क = ४० अङ्क	१५ प्रश्न X २ अङ्क = ३० अङ्क	६ प्रश्न X ५ अङ्क = ३० अङ्क

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प्रा.अम. ईन्स्ट्रुमेन्ट (Instrument) (खूला र आन्तरिक) पदको प्रयोगात्मक परीक्षा योजना र पाठ्यक्रम

समय: १ घण्टा

पूर्णाङ्क : ५०

उत्तीर्णाङ्क : २५

S.N.	Topic	Marks
1.	Component Identification and it's application	20
2.	Use of Various Measuring Instrument	10
3.	Fault finding	10
4.	Workshop Practical	10
	Total	50

1. Component Identification and it's application:

परीक्षार्थीले layout गरी राखिएका विभिन्न Optical Instrument components को Technical नाम लेख्नु पर्ने हुन्छ र दिइएको Component कून ठाउँमा प्रयोग हुन्छ भन्ने समेत खूलाउनु पर्ने छ । यसमा १० प्रकारका सामानहरू देखाइनेछ र प्रत्येकको नाम र प्रयोग सहि भएमा २ अंक प्रदान गरिनेछ ।

2. Use of Various Measuring Instrument

परीक्षार्थीलाई विभिन्न प्रकारका Measuring Instrument दिइनेछ । उक्त Measuring Instrument प्रयोग गरेर कूनै ५ वटा Components को Focus and Resolution Test गर्नु पर्नेछ । प्रति सहि answer को अंक २ प्रदान गरिनेछ ।

3. Fault finding

परीक्षार्थीहरूलाई कूनै २ वटा Faulty Equipment दिइनेछ । उक्त faulty equipment मा भएका समस्या पत्ता लगाउनु पर्नेछ । प्रत्येक समस्या सहि पहिचान गरेमा 2.5 marks र faulty parts identify गरेमा २.५ marks गरी जम्मा १० marks दिइने छ ।

4. Workshop Practical

परीक्षार्थीले workshop मा Testing Equipment बाट ५ वटा प्राक्टिकल गरी देखाउनु पर्नेछ । जसका लागि दिइएको Equipment बाट ५ वटा प्रश्न सोधिने छ । प्रत्येक सहि जवाफको २ अंक हुने छ ।

द्रष्टव्य : प्रयोगात्मक परिक्षाको लागि लिखित परिक्षाको पाठ्यक्रमबाट प्रश्नहरू सोध्न सकिनेछ ।