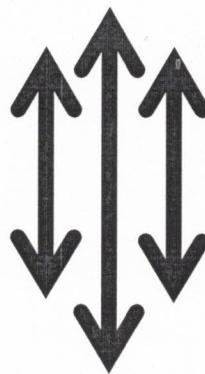
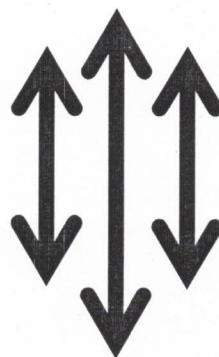


नेपाली सेना  
श्री भर्ना छनौट निर्देशनालय, कार्यरथी विभाग,  
जंगी अड्डा



प्रा.उ.से.भैहिकल मेकानिक्स (आन्तरिक) पदको  
लिखित परीक्षाको पाठ्यक्रम



२०७७

## नेपाली सेना

### प्रा.उ.से.भेहिकल मेकानिक्स (आन्तरिक) पदको लिखित परीक्षाको पाठ्यक्रम

समय: ४ घण्टा

पूर्णाङ्क : १५०  
उत्तीर्णाङ्क : ६०

यो पाठ्यक्रम नेपाली सेनाको प्रा.उ.से.भेहिकल मेकानिक्स (आन्तरिक) पदको उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सरिक हुने उम्मेदवारहरूको पेशा सम्बन्धी 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 गराईनेछ ।
- (ग) प्रश्नपत्र निर्माण गर्दा पाठ्यक्रममा समावेश भएका सबै विषयहरूलाई यथासंभव समिटनेछ ।
- (घ) बस्तुगत र विषयगत संयुक्त रूपमा 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 २०७७/०८/१८ 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	५ प्रश्न x ५ अङ्क = २५	३ घण्टा
				लामो उत्तर	१५ प्रश्न x २ अङ्क = ३०	
					२ प्रश्न x १० अङ्क = २०	

लिखित परीक्षाको योजना र पाठ्यक्रम

लिखित परीक्षाको पाठ्यक्रम

Unit	Topics
Unit 1	<p><b><u>STRENGTH OF MATERIALS</u></b></p> <p><b>1. INTRODUCTION TO STRENGTH OF MATERIALS AND IT'S SCOPE</b></p> <p><b>2. BASIC PRINCIPLE</b> (Load – type, reaction, Deformation of a body under the action of external forces, Stress and strain, definition, units types, Factor of safety, permissible of working stress, Related problems)</p> <p><b>3. TENSION AND COMPRESSION</b> (Hooks law, Tensile strength, Compressive strength, Related problems )</p> <p><b>4. SHEAR AND TENSION</b> (Shear stress and strain, Shear strength of materials, Compressive strength, Related problems )</p> <p><b>5. BENDING</b> (Bending stress and strain, Related problems)</p>
Unit 2	<p><b><u>HYDRAULIC AND HYDRAULIC MACHINES</u></b></p> <ol style="list-style-type: none"> <li>1. Introduction to Hydraulic Properties of fluids</li> <li>2. Pascal Law and its application</li> <li>3. Introduction to Hydraulic system and its components such as Pump, Cylinder, Check Valves, Reservoir</li> <li>4. Type of Hydraulic System</li> <li>5. Introduction to Hydraulic Pumps and their types</li> <li>6. Purpose and Function of Hydraulic Valves and their types</li> <li>7. Hydraulic Cylinder</li> <li>8. Hydraulic Motors</li> <li>9. Purpose and function of Hydraulic Accumulators and their types Tube and Couplers and Hydraulic Seals etc.</li> <li>10. General Knowledge of Reservoir oil Coolers Hose Pipes</li> <li>11. Introduction to General maintenance of Hydraulic System</li> <li>12. Diagnose and Testing of Hydraulic System</li> <li>13. Special Tools and Equipment</li> </ol>

	<b>MACHINE DESIGN</b>
Unit 3	<p><b>1. PIPES AND PIPES JOINTS</b> (Introduction, Stresses in pipes, Pipe joints, Standard pipes and flanges for steam, Hydraulic pipe joint for high pressure)</p> <p><b>2. SCREW JOINTS</b> (Introduction, Advantage and disadvantage of screw joints, Definition, Forms of screw threads, Location of screwed joints, Common type of screw fastening, Locking device, Designation of screw threads, Stress in screwed fastening due to static loading, Boiler says, Bolts of uniform strength, Bolted joint under eccentric loading)</p> <p><b>3. COTTER AND KNUCKLE JOINTS</b></p> <p>(Introduction, Types of cotter joint, Socket and spigot cotter joint, Sleeve and cotter joint, Gob and cotter joint, Knuckle joint, Dimensions of various parts of the knuckle joint, Adjustable screwed joints for round rods )</p> <p><b>4. KEYS AND COUPLING</b> (Introduction, Types of keys, Sunk keys, Saddle keys, Tangent keys, Round keys, Splines, Force action on stink key, Shaft coupling, Types of shaft couplings, Clamp or compression coupling, Clamp or compression coupling, Flange coupling, Flexible coupling, Bushed –pin flexible coupling, Universal coupling )</p> <p><b>5. COLUMNS AND STRUTS</b> (Introduction, Failure of a column or strut, Types of end conditions of columns, Eulers column theory, Slenderness ratio, Long column subjected to eccentric loading, Force action on a connecting rod)</p> <p><b>6. POWER SCREW</b> (Introduction, Types of screw threads used for power screws, Multiple threads, Torque required to raise load of square threaded screw, Coefficient of friction, Acme or trapezoidal threads, Stresses in power screws)</p>
Unit 4	<b>AUTOMOBILE TECHNOLOGY</b> <p><b>1. REVISION OF AUTOMOBILE</b> ( Engine system, Transmission system, Cooling system, Lubrication system, Suspension system, Breaking system, Ignition system, Lighting system)</p> <p><b>2. DIESEL ENGINE (TURBO)</b> (Fuel injection system, pistons, Lubricating system, Turbo charger, Braking system (power brake), Power Steering)</p> <p><b>3. INTRODUCTION OF DIFFERENT VEHICLE</b> (MPV, Nissan, TATA series, Mazda Pick Up, Jiminy, Gypsy King Scorpio, Mahindra bolero etc.)</p> <p><b>4. CHINESE A.P.C.</b> (General description and technical data, Construction, operation and technical data, Engine, Transmission, Steering, Lubricating of engine and transmission contents, Break, Central tire inflation and deflation system, On water drive, Air condition winch N.B.C., G.P.S., night vision Radio communication, Maintenance and servicing, Trouble shooting )</p> <p><b>5. DIESEL ENGINE SERVICE</b> (Checking cylinder bore, Piston fitting, Piston ring installation, Re –assembling of connection rod and piston, crank shaft assy., Alignment of crankshaft and main bearing bores, Valve grinding, Adjustment of valve tappets )</p>

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**6. THEORY OF MOTOR VEHICLE** (Dynamic force acting on a motor vehicle, Tractive force on the driving

Wheels, Tractive characteristics of a motor vehicle, Equation of motion of a motor vehicle, Tractive force according to condition of tire road grip, Fuel economy characteristics, Effects of operating factor on fuel economy, Breaking dynamic of a motor vehicle, General introduction to breaking dynamics, Breaking force on wheels, Characteristics of motor vehicle breaking dynamics)

**7. FUNDAMENTAL OF MORTAR VEHICLE**

(General Idea on steer ability characteristics, Steer ability characteristics, Rolling of the steerable wheel without slipping, Wheels lateral sleep and ability of motor vehicle to turn, Oscillation of the steerable wheels, Stabilization of the steerable wheel Characteristics of smoothness of run, Oscillation of motor vehicle, Effect of design factors on smooth running, Effect of tires, Independent suspension)

**8. SI ENGINE** Carburetor, Ignition system, Exhaust system (16 valve), Fundamental of electronic in motor vehicle

**WORKSHOP ADMINISTRATION & MAINTEANCE MANAGEMENT**

Unit 5

1. Definition and importance of management, Function of management, Planning – nature types forecasting and budgeting, Organizing –nature structure, And types, Staffing –importance and need for proper staffing types of staff, Directing and motivating –nature varying approach to direct, directing and motivating, Controlling – nature comparing performance with standard, corrective action
2. Introduction to hygiene and safety, Cost and liability of hygiene and safety, General accident prevention and safety
3. Spare part procurement procedure in EME, Reliability and quality of spares
4. Spare parts management, Management of obsolete spare parts, Inventory control of spare parts
5. Maintenance Management, Present Maintenance system in EME units (Brigade, Base workshop, EME Bn, Brigade workshop and Unit ERE)

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यस पेशा सम्बन्धी विषयको पाठ्यक्रमका एकाईहरुवाट सोधिने प्रश्नहरु निम्नानुसार हुनेछ

S. N.	Topics	Objective Question and Marks	Subjective Questions & Marks		
			Very Short Question and Marks	Short Question and Marks	Long Question and Marks
1	Unit1	$15 \times 1 = 15$	$3 \times 2 = 6$	$1 \times 5 = 5$	
2	Unit2	$15 \times 1 = 15$	$3 \times 2 = 6$	$1 \times 5 = 5$	$1 \times 10 = 10$
3	Unit3	$10 \times 1 = 10$	$2 \times 2 = 4$	$1 \times 5 = 5$	
4	Unit4	$25 \times 1 = 25$	$5 \times 2 = 10$	$1 \times 5 = 5$	$1 \times 10 = 10$
5	Unit5	$10 \times 1 = 10$	$2 \times 2 = 2$	$1 \times 5 = 5$	
<b>Total</b>		<b><math>75 \times 1 = 75</math></b>	<b><math>15 \times 2 = 30</math></b>	<b><math>5 \times 5 = 25</math></b>	<b><math>2 \times 10 = 20</math></b>

### प्रयोगात्मक परिक्षाको पाठ्यक्रम

समय : ९० मिनेट

पूर्णाङ्क: ५०

उत्तीर्णाङ्क: २५

S.N.	Topic	Marks	Time-Minutes
1.	Machine Parts Identification	5	10
2.	Automobile Parts Identification	10	10
3.	Use Various Measuring Instruments	10	20
4.	Detail Description of a Machine	15	20
5.	Skill in using basic tools	5	20
6.	Workshop Administration	5	10
<b>Total</b>		<b>50</b>	90

#### १. Machine Parts Identification:

परिक्षार्थीले Layout गरी राखिएका विभिन्न Machine Parts को Technical नाम लेख्नु पर्ने हुन्छ र दिइएको Parts कहाँ कहाँ प्रयोग हुन्छ भन्ने समेत खुलाउनु पर्नेछ । यसमा ५ प्रकारका सामानहरु देखाइनेछ र प्रत्येक नाम र प्रयोग सहि भएमा १ अंक प्रदान गरिनेछ ।

#### २. Automobile Parts Identification

परिक्षार्थीले Layout गरी राखिएका विभिन्न Automobile Parts नाम लेख्नु पर्ने हुन्छ र दिइएको Parts कहाँ कहाँ प्रयोग हुन्छ भन्ने समेत खुलाउनु पर्नेछ । यसमा १० प्रकारका सामानहरु देखाइनेछ र प्रत्येकको नाम र प्रयोग सहि भएमा १ अंक प्रदान गरिनेछ ।

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### ३. Use Various Measuring Instruments

परिक्षार्थीलाई विभिन्न प्रकारका Measuring Instrument दिईनेछ । उक्त Measuring Instruments प्रयोग गरेर कुनै एक बस्तुको Density, Weight, Mass पत्ता लगाउनु पर्ने हुन्छ । प्रत्येक सहि Answer को अंक १ प्रदान गरिनेछ ।

### ४. Detail Description of a Machine

परिक्षार्थीले कुनै एक Machine को बारेमा निम्न कुराहरु प्रकाश पार्नु पर्नेछ ।	
(क) प्रयोगमा आउने अवस्था र यसबाट गर्न सकिने कामहरु .....	३
(ख) Working Principle of the machine .....	५
(ग) Machine मा काम गर्ने तरिका .....	७
१. Machine Setup .....	२
२. Functionality Check.....	२
३. Working Procedure .....	३

### ५. Skill in using basic tools

परिक्षार्थीलाई Workshop मा प्रयोग हुने कुनै ५ वटा Tools प्रयोग गर्न लगाईनेछ । प्रयोग सहि भएमा १ अंकको दरले Marks प्रदान गरिनेछ ।

### ६. Workshop Administration

परिक्षार्थीलाई Workshop Administration सम्बन्धमा Viva प्रश्न लिईनेछ, उक्त Viva मा ५ वटा प्रश्न सोधिनेछ । प्रत्येक सहि उत्तरको अंक १ प्रदान गरिनेछ ।

*dr*

The End

*Amrit  
Amit*

*MV*