

नेपाल नागरिक उड्डयन प्राधिकरण
प्राबिधिक सेवा, मेकानिकल ईन्जिनियरिङ्ग समूह, पाँचौं तह, वरिष्ठ सहायक पदको खुला/आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

द्वितीय पत्र – सेवा सम्बन्धी

खण्ड (क) - ५० अङ्क

1. **Workshop Practices**

- 1.1 Measuring Instruments - Scale, Try square, Bevel Protractor, Vernier Caliper, Micrometer, Gauges and Filler Gauges; Metric, FPS and SI Unit
- 1.2 Hand tools and their applications
- 1.3 Cutting Tools, Nature, Selection and Sharpening
- 1.4 Machine Tools: Lathe, Milling, Shaper, Grinding, Drilling machines and their Operation procedure
- 1.5 Cutting speed, Feed, Depth of cut
- 1.6 Job material knowledge

2. **Maintenance System**

- 2.1 Types of maintenance system
- 2.2 Importance of maintenance
- 2.3 Advantage and disadvantage of different maintenance system

3. **Record Keeping**

- 3.1 Importance of record keeping
- 3.2 Knowledge of maintenance Job Card
- 3.3 Basic knowledge of operation log sheet
- 3.4 Use of parts catalogue/workshop manual
- 3.5 Depreciation and its types
- 3.6 Fault Reporting and Clearing System

4. **Safety Practices**

- 4.1 Importance of Safety
- 4.2 Types of Safety: Personal Safety, Machine's Safety, Tools Safety, Workplace Safety
- 4.3 Safety tools and devices
- 4.4 Knowledge of Industrial safety & Hygiene

5. **Mechanical System**

- 5.1 Motor: Types, Operation and Application
- 5.2 Pump: Types, Operation and Application
- 5.3 Power Generation system
- 5.4 Basic concept of Electric Vehicles (EVs)

6. **Airport Terminal Facilities Equipment**

- 6.1 Elevator: Operation, Maintenance and Troubleshooting
- 6.2 Escalator: Operation, Maintenance and Troubleshooting
- 6.3 Baggage Handling System (BHS): Types, Components and Troubleshooting
- 6.4 Basic concept of Aerobridge

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खण्ड (ख) - ५० अङ्क

7. **Engineering Graphics and Machine Drawing**
 - 7.1 Orthographic projection (angle of projection) and dimensioning
 - 7.2 Isometric drawing of machine parts including sections
 - 7.3 Drawing of joints: nuts, bolts, riveted joints, welded joints, gears, keys and other joints
8. **Airport Rescue and Firefighting (ARFF) Vehicles**
 - 8.1 Automatic Transmission System
 - 8.2 Firefighting pump
 - 8.3 Basic concept and application of Pneumatic System
 - 8.4 Basic concept and application of Hydraulic System
 - 8.5 Types of Filters
9. **Automotive System**
 - 9.1 CI engine, SI engine and its components,
 - 9.2 Braking system, Transmission system, Suspension system, Cooling system, Lubricant system, Steering system, Exhaust system, Troubleshooting of each system
 - 9.3 Electrical system, Fuel injection System, Types and Properties of Batteries and Troubleshooting of each system
 - 9.4 Types of wheel, tyres and rating of tyres, Advantages and disadvantages of radial ply and cross ply tyres
 - 9.5 Types of Fuel, Types of Lubricants, application and replacement
10. **Air Conditioning System**
 - 10.1 Introduction and lay out of different types of Air Conditioning System
 - 10.2 Introduction and function of different components of air conditioning
 - 10.3 Types of refrigerant and their properties
 - 10.4 Concept of Cold Storage

द्वितीय पत्रबाट निम्नानुसार प्रश्न सोधिनेछ :

खण्ड	अङ्कभार	विषयगत प्रश्न संख्या	
		छोटो उत्तर	लामो उत्तर
(क)	५०	६ प्रश्न X ५ अङ्क= ३०	२ प्रश्न X १० अङ्क= २०
(ख)	५०	६ प्रश्न X ५ अङ्क= ३०	२ प्रश्न X १० अङ्क= २०
जम्मा	१००	१२ प्रश्न X ५ अङ्क= ६०	४ प्रश्न X १० अङ्क= ४०

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पूर्णाङ्क : ३०

उत्तीर्णाङ्क : १५

A. Workshop Practices (10 Marks)

1. Identification and use of hand tools and special tools
2. Identification of main components and parts of machine
3. Identification of major specifications of machine
4. Identification and use of safety tools and devices
5. Use of workshop manuals
6. Lathe exercise: Turning, Boring, Internal/External thread cutting, Eccentric turning
7. Shop fitting exercise: Cutting, Fitting, Drilling, Tapping, Male and Female Joints
8. Milling exercise; Horizontal milling with cylindrical and Side/Face cutters
9. Welding exercise; Single vee, Butt-weld, Fillet weld, Brazing, Soldering

B. Vehicle Maintenance (10 Marks)

1. Identification of major components of vehicle
2. Use of maintenance manual and spare parts manual
3. Change of oil, fuel and air filter
4. Top-up and Change of lubricants
5. Changing of hydraulic/pneumatic pipe, hose and grease nipples system
6. Servicing of cooling, fuel, clutch and brake system
7. Cleaning, Changing, Gap setting of spark plugs
8. Identification of electrical components of vehicle
9. Changing of bearings, disassembly/assembly of electric motor/water pump
10. Servicing of starter motor
11. Diagnosis and fault finding related to fuses, charging, ignition and electrical system

C. Air Conditioning System Maintenance (10 Marks)

1. Identification of major components
2. Identification of spare parts
3. Servicing of air conditioning system
4. Identification and changing of refrigerants
5. Dismantling, Assembling, Repair and Maintenance of split air-conditioning unit