

नेपाल नागरिक उड्डयन प्राधिकरण  
प्राबिधिक सेवा, मेकानिकल ईन्जिनियरिङ्ग समूह, नवौं तह, प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
लिखित परीक्षाको लागि पाठ्यक्रम

द्वितीय पत्र : सेवा सम्बन्धी

खण्ड (क) - ५० अङ्क

**1. General**

- 1.1. Productivity & Efficiency of Organization
- 1.2. Dispute Resolution in Contract
- 1.3. Claim and Arbitration
- 1.4. Standard Bidding Document: International Competitive Bidding (ICB) and National Competitive Bidding (NCB)
- 1.5. Procurement of Consulting Services; TOR, EOI and RFP
- 1.6. INCOTERMS, Guidelines and requirements

**2. Project Management & Economics**

- 2.1. Inventory Control & Management
- 2.2. Quality Management & Certification Process
- 2.3. Budget Planning and Allocation
- 2.4. Network Methods: PERT and CPM
- 2.5. Project Evaluation Techniques: Payback period method, NPV method, Future value analysis and IRR method
- 2.6. Benefit and Cost Analysis: Cost benefit ratio, breakeven analysis
- 2.7. Depreciation and its types
- 2.8. Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) of Airports
- 2.9. Technology transfer and Change management for new equipment/ system

**3. Environment Pollution Control**

- 3.1. Pollution Standards
- 3.2. Vehicle Emission Norms and Standards
- 3.3. Emission Control System and devices
- 3.4. Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA)

**4. Equipment/Machinery Replacement Policy**

- 4.1. Replacement Plan of Equipment/Systems
- 4.2. Standardization of Equipment/Machinery
- 4.3. Life cycle costing
- 4.4. Cost Benefit Analysis and Risk Analysis of equipment replacement
- 4.5. Owner Acceptance sampling and Testing

**5. Maintenance Planning of Mechanical equipment**

- 5.1. Maintenance Practice and Different types of Maintenance
- 5.2. Maintainability and Interchangeability
- 5.3. Record keeping and Statistical Method of Data analysis
- 5.4. Spare parts Management

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- 5.5. Periodic/Routine Plan, Recurrent Plan, Emergency Plan for maintenance
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): Working principle, Types, Layout, Components, VFD system and Troubleshooting
  - 6.4. Basic concept of Aerobridge
  - 6.5. Airport Trolley
7. **Airport Rescue and Firefighting (ARFF) Vehicles**
- 7.1. Automatic Transmission System
  - 7.2. Firefighting pump
  - 7.3. Foam proportioning system
  - 7.4. Operation and application of Pneumatic System
  - 7.5. Operation and application of Hydraulic System
  - 7.6. Application of Electrical System
  - 7.7. Determining Fire Fighting Category
  - 7.8. Power Take-Off
- खण्ड (ख) - ५० अङ्क**
8. **Automotive system**
- 8.1. CI engine, SI engine: Functions and components, Application
  - 8.2. Braking system, Transmission system, Suspension system, Cooling system, Lubricant system, Steering system, Exhaust system, Troubleshooting of each system
  - 8.3. Electrical system, Fuel injection System, Types and Properties of Batteries and Troubleshooting of each system
  - 8.4. Identification of need of engine overhaul
  - 8.5. Purpose and function of super charger and turbo charger
  - 8.6. Types of wheel, tyres and rating of tyres, Advantages and disadvantages of radial ply and cross ply tyres
  - 8.7. Types of Fuel, Types of Lubricants, application and replacement
  - 8.8. Reliable maintenance and troubleshooting practice for automobiles
  - 8.9. Vehicular Emission Standards
9. **Refrigeration and Air condition system**
- 9.1. Working Cycle: Vapour Compression and Vapour absorption refrigeration cycle
  - 9.2. Air conditioning Types, Equipment, Design and Selection
  - 9.3. Cooling Load and Heating Load calculation,
  - 9.4. Maintenance and Troubleshooting of Air condition system/Equipment
  - 9.5. Refrigerant: Type, Properties, Environmental effect and selection criteria

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10. **Electro-Mechanical Equipment for Aerodrome**
  - 10.1. Pumps, Motors and Compressors
  - 10.2. Power Generation Devices: Generator Types, Application and Selection
  - 10.3. Concept of Transfer Switch, AMF Panel, Application, Requirements and selection
  - 10.4. Uninterruptible Power Supplies (UPS)
  - 10.5. Principle of No-break power generation
  - 10.6. Concept and Application of Friction Testing Machine, PCN Machine
  - 10.7. Types and operation of Ground Handling Equipment
  - 10.8. Types of equipment for removal of Disabled aircraft
  - 10.9. Application of Electric Vehicle, Battery Management System, Charging System
11. **ICAO related Documents**
  - 11.1. ICAO Annexes and Reference Documents related with Mechanical system  
(Annex 14 part I, Annex 9, Annex 17)
  - 11.2. Aerodrome Design Manual DOC 9157
  - 11.3. Airport Service Manual Doc 9137
12. **Aerodrome Certification**
  - 12.1. Aerodrome Certification Regulatory System, Regulations and requirements
  - 12.2. Aerodrome Certification Procedures
  - 12.3. Aerodrome Manual
13. **Aerodrome Safety Management System**
  - 13.1. Safety management system frameworks (Regulatory framework, ICAO SARPs)
  - 13.2. Safety Policy, Safety organization, Safety planning and safety Standards
  - 13.3. Assessment of the current level of safety and Acceptable level of Safety
  - 13.4. Hazard identification, Risk mitigation and, Safety Assurance
  - 13.5. SMS implementation
  - 13.6. SMS Manual

द्वितीय पत्रबाट निम्नानुसार प्रश्न सोधिनेछ :

द्वितीय पत्र (विषयगत)				
विषय	खण्ड	अङ्कभार	तर्कयुक्त विश्लेषणात्मक प्रश्न	समस्या समाधानमूलक प्रश्न
सेवा सम्बन्धी	(क)	५०	३ प्रश्न X १० अङ्क = ३०	१ प्रश्न X २० अङ्क = २०
	(ख)	५०	३ प्रश्न X १० अङ्क = ३०	१ प्रश्न X २० अङ्क = २०
जम्मा		१००	६ प्रश्न X १० अङ्क = ६०	२ प्रश्न X २० अङ्क = ४०