

नेपाल नागरिक उड्डयन प्राधिकरण  
प्राविधिक सेवा, ईलेक्ट्रोनिक एण्ड टेलिकम्युनिकेशन इंजिनियरिङ्ग समूह, आठौं तह, उपप्रबन्धक पदको खुला/आन्तरिक  
प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र : सेवा सम्बन्धी

खण्ड (क) - ५० अङ्क

**1. Computer and Digital Communications**

- 1.1. Architecture
- 1.2. Network components
- 1.3. Framing
- 1.4. Channelization and signaling
- 1.5. Packet and Switched services-ATM, xDSL, Frame Relay, X-25 MPLS, WIFI
- 1.6. Internetworking and router-based networks: the TCP/IP suite of protocols, routing and flow control, Internet addressing and domain names
- 1.7. Encryption and security issues

**2. Telecommunication Systems**

- 2.1. Wireless systems: HF/VHF, Satellite, Microwave/Ultra High frequency (UHF), Wireless Local loop (WLL), Cellular Communication
- 2.2. Wireline systems: PSTN, Optic fiber, LAN, WAN/MAN, Broadband cable

**3. Data systems**

- 3.1. Transmission and digital multiplexing systems- E1, T1, SDH, PDH, SONET
- 3.2. Broadband techniques-DSL, ATM,
- 3.3. ISDN and VoIP

**4. Voice systems**

- 4.1. Transmission and Switching systems
- 4.2. Modulation techniques
- 4.3. Multiplexing and signaling
- 4.4. Alerting and supervision

**5. Power supply and lightening protection systems**

- 5.1. Power supply reliability and availability requirements for aviation ground systems
- 5.2. Isolation and surge protection systems
- 5.3. Lightening protection systems
- 5.4. UPS, backup generators, power supply switch-over times in aviation ground systems

खण्ड (ख) - ५० अङ्क

**6. Communication Navigation and Surveillance (CNS) Systems**

- 6.1. Communication systems-
  - 6.1.1. Voice- AM, SSB, SATCOM, ATIS, Designated operational coverage, Air-Ground, Ground-Ground Communication, Voice Communication Switching System (VCCS)
  - 6.1.2. Data -AFTN, ATN, ATS Message Handling systems, ATS Interfacility Data Communications, Data links (VHF, HF, Mode-S)
- 6.2. Navigation systems
  - 6.2.1. Terrestrial radio navigation systems
  - 6.2.2. Satellite radio navigation systems (GNSS)
  - 6.2.3. Introduction to inertial and multisensor navigation systems
  - 6.2.4. Landing systems (ILS, MLS, GLS)

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- 6.3. Surveillance systems
  - 6.3.1. Cooperative/non-cooperative and dependent /independent surveillance (PSR, SSR, MSSR, ADS-B, ADS-C, MLAT etc)
  - 6.3.2. Precision approach and surface movement RADARs
  - 6.3.3. Multi-Sensor Data Processing System
- 6.4. Aviation Security
  - 6.4.1. Fundamentals of electronic security systems (X-ray baggage inspection systems, CCTV, Metal detectors), Flight Information Display System
- 6.5. Air traffic management
  - 6.5.1. Fundamentals of air traffic services and management
  - 6.5.2. Fundamentals of Performance Based Navigation (PBN) and National PBN Plan
- 7. ICAO and Standardization**
  - 7.1. ICAO global, regional and nation air navigation plans and planning process
  - 7.2. Global Air Navigation Plan-Performance improvement areas
  - 7.3. Global Air Traffic Management Operational Concept, BBB framework, ASBU framework; Aviation System Block Upgrades-blocks and modules
  - 7.4. APAC Seamless ATM/ANS Plan
  - 7.5. Competency based training and assessment for ATSEP –phases, concept and design
  - 7.6. Standards and applicability in the installation and maintenance of CNS/ATM systems
  - 7.7. ICAO Annexes 10 Volumes 1-6, Annex 11, 15 and related Documents
  - 7.8. Ground and flight checks of airways facilities and facility status determination
- 8. Radio spectrum management**
  - 8.1. Role of ITU and Spectrum management principles
  - 8.2. National spectrum management policies
  - 8.3. Equipment Authorization/approval and monitoring
  - 8.4. Spectrum measurements, monitoring, and interference resolving
  - 8.5. Aviation radio spectrum management and roles of ICAO, ITU and WRC
- 9. Human Factors issues in CNS/ATM systems**
  - 9.1. Automation in advanced aviation systems
  - 9.2. Human-centered technology
  - 9.3. Principles and qualities of human-centered automation
- 10. Safety oversight of Air Navigation Services**
  - 10.1. Organizational structure for safety oversight of ANS
  - 10.2. Distinction between the regulator and service providers
  - 10.3. Oversight surveillance programme
  - 10.4. SMS legislation and regulations for ANS providers and implementation

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
<b>जम्मा</b>		<b>१००</b>	<b>६ प्रश्न X १० अङ्क = ६०</b>	<b>२ प्रश्न X २० अङ्क = ४०</b>