

**नेपाल टेलिकम**  
(नेपाल दूरसंचार कम्पनी लिमिटेड)

प्राविधिक सेवा, टेलिकम ईन्जिनियरिङ्ग समूह, तह- ९, उप-प्रबन्धक पदको खुल्ला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम ।

**प्रथम पत्र : Rules & Regulations, Management & contemporary Issues लाई निम्न दुई भागमा विभाजन गरिएको छः**

समूह -क (Section A) - ऐन नियम, विनियम तथा नीतिहरू

समूह -ख (Section B) - व्यवस्थापन

**Full Marks: 100**

**Pass Mark: 40**

**Time: 3 hours**

**1. Section A अन्तर्गत निम्न अनुसार प्रश्न सोधिनेछः**

S. No.	Type of question	Number of Questions	Weightage per question	Total Marks
1	Short Answer questions	4	5	20
2	Long Answer questions	2	10	20
	Total			40

Note: Only one short question shall be prepared for each topic group.

**2. Section B अन्तर्गत निम्न अनुसार प्रश्न सोधिनेछः**

S. No.	Type of question	Number of Questions	Weightage per question	Total Marks
1	Short Answer questions	6	5	30
2	Long Answer questions	3	10	30
	Total			60

**Note:**

- Only one short question shall be prepared for each topic group.
- There should be one long question for each of the topic group (3. General management, 4. Project management).
- One of the long questions should be Comprehensive type with problem presentation seeking answers on problem analysis and solutions.

१. दूरसञ्चार सेवा सम्बन्धि नीति

- दूरसञ्चार नीति, २०६०
- सूचना तथा सञ्चार क्षेत्रको दिर्घकालिन नीति, २०५९
- सूचना प्रविधि नीति, २०६७
- रेडियो फ्रिक्वेन्सि नीति, २०६९
- दूर संचार, आर्थिक उदारीकरण र निजी क्षेत्र
- VOIP को नियमन सम्बन्धी विद्यमान व्यवस्था (Call Bypass, grey market of VOIP)

२. दूरसञ्चार सेवा सम्बन्धि ऐन नियम तथा विनियम

- नेपाल दूरसञ्चार कम्पनी लिमिटेडको प्रबन्ध पत्र
- नेपाल दूरसञ्चार कम्पनी लिमिटेडको नियमावली
- नेपाल दूरसञ्चार कम्पनी लिमिटेडको आर्थिक विनियमावली, २०७१
- नेपाल दूरसञ्चार कम्पनी लिमिटेडको कर्मचारी विनियमावली, २०६१
- सञ्चार संस्थान ऐन, २०२८
- दूरसञ्चार ऐन, २०५३ र दूरसञ्चार नियमावली २०५४
- विद्युतीय (इलेक्ट्रोनिक) कारोबार ऐन, २०६३
- नेपाल ईन्जिनियरिङ्ग परिषद ऐन, २०५५ तथा आचार संहिता

३. आर्थिक कारोबार सम्बन्धि ऐन नियम तथा विनियम

- सार्वजनिक खरिद ऐन, २०६४ र सार्वजनिक खरिद नियमावली, २०६४
- अख्तियार दुरुपयोग ऐन, २०४८
- भ्रष्टाचार निवारण ऐन, २०५९
- मूल्य अभिवृद्धि कर ऐन, २०५३ र मूल्य अभिवृद्धि कर नियमावली

४. अन्य

- कम्पनी ऐन, २०६३
- आयकर ऐन, २०५८
- उपभोक्ता संरक्षण ऐन, २०५४ तथा नियमावली
- वातावरण संरक्षण ऐन, २०५३ र वातावरण नियमावली, २०५४
- सूचनाको हक सम्बन्धी ऐन, २०६४ र सूचनाको हक सम्बन्धी नियमावली, २०६४
- जग्गा प्राप्ति ऐन, २०३४
- आवश्यक सेवा सञ्चालन ऐन, २०१४
- सुशासन (व्यवस्थापन तथा सञ्चालन) ऐन, २०६४
- नेपाल टेलिकमको चालु आवधिक योजना

५. Telecom Development Organization, Regulators and Operators

- International Agencies : ITU, APT, WTO - their major roles and relations with telecom operators, Network Readiness Index, Digitization Index
- UAO, USO, USF
- Telecom regulations : Regulatory Objectives, Sector Reform Initiatives in Nepal

- National Regulator: Nepal Telecom Authority (NTA) - Organization and functional role in sector development
- Major National Telecom Operators: Their Services and market Shares, Comparative strengths and weaknesses

## **Section B (समूह ख) - व्यवस्थापन**

पूर्णाङ्क - ६०

### **1. Engineering Economics**

- Cash flow analysis
- Project evaluation indicator/ techniques
- Capital Investment Decision Analysis and evaluation Techniques (NPV, IRR, PBP, PI)
- Risk analysis
- Life cycle management (MTTF/MTTR)
- Inventory management
- Depreciation, capitalization, amortization

### **2. Organizational Management**

- Internal Organization
- Management Information System
- Motivation and Leadership
- Personal Management
- Time Management
- Total Quality Management
- Productivity Management
- Change Management

### **3. General Management**

- Roles and responsibilities of senior Manager, company leaders
- Management of time
- Problem solving and decision making
- Communication Skill
- Interpersonal Relation
- Recruitment, training and placement of staff
- Management of Staff Performance
- Handling complains and grievances
- Performance appraisal
- Staff discipline
- Conflict Management
- Planning and control systems
- Delegation of authority
- Industrial Relations/Peace

#### **4. Project Management**

- Dimension of Project Management
- Project Goal Setting
- Concept of project planning and management and processes
- Recent project planning approaches
- Linkage between plans, program and projectsProject planning matrix- Logical Framework
- Project feasibility study- demand /need forecasting and analysis, Technical Analysis and economic analysis, environmental analysis
- Project Scheduling
- Project Life Cycle
- Project appraisal screening
- Project Implementation plan ( PERT, CPM, Network diagram, Gantt Chart)
- Project evaluation Indicators/techniques
- Project proposal & reporting, control & monitoring
- Project handover and its methods
- Project risk management and contingency planning
- Basics of procurement of goods, services and civil works
- Preparation of contract documents, specifications, condition of contract and other contractual procedures
- Contract negotiation
- Building relations with suppliers and partners

#### **5. Marketing Management**

- Marketing concept & Strategies- Product / service, Pricing & promotion & marketing channels
- Customer relationship Management- Concept, roles & functions
- Branding and its importance
- Market demand and Segmentation
- Competition and Competitors' analysis
- Service Marketing
- Marketing management issues and challenges of NT

#### **6. Financial Management**

- Capital Structure planning
- Budgeting and budgetary control
- Financial Statement and financial ratio analysis
- Working Capital management
- Auditing: Financial audit, Performance Audit, Technical Audit

#### **7. Risk Management**

- Concept, Identification and Measurement
- Types of risks (Business, Project, System, Market)Risk Analysis and risk factors
- Techniques of managing risks

- Emergency management

#### 8. Contemporary issues

- Current organization and management issues and challenges facing NT
- General Organizational structure of telecom company, need of restructuring
- Outsource principle & current trend
- Voluntary retirement schemes, employee layoff and its impact
- Media relationship management
- Inter-organizational relations
- Collective decision processing
- Other current issues

### महत्वपूर्ण जानकारीहरू

१. प्रश्नहरू अंग्रेजी तथा नेपाली दुवै वा कुनै एक भाषामा मात्र पनि सोध्न सकिनेछ ।
२. प्रश्नहरू सैद्धान्तिक, व्यावहारिक र विश्लेषणात्मक किसिमबाट सोधिनेछन् ।
३. परीक्षार्थीहरूले अंग्रेजी वा नेपाली मध्ये कुनै एक वा दुवै भाषामा उत्तर दिन सक्नेछन् ।
४. प्रश्नहरूसंग सम्बन्धित ऐन, नीति, नियम तथा प्रचलित नेपाल कानूनहरू (नेपाल दूरसञ्चार कम्पनी लिमिटेडसंग सम्बन्धित समेत) मा परीक्षा मिति भन्दा तीन महिना अघिसम्ममा संशोधन भई कायम रहेका व्यवस्था लागू हुनेछ ।

## Nepal Telecom

Syllabus and Question pattern for Open Competition for lateral entry

Level: 9

Post: Deputy Manager (Telecom)

Group: Technical

Subgroup : Engineering

Second Paper –Technical

Full Marks : 100

Pass Mark : 40

Time: 3 hours

S.No.	Type of question	Number of Questions	no. of Question to be solved	Weightage per question	Total Marks
1	Analytical review	5	4	15	60
2	Analytical and solution oriented	3	2	20	40
	Total				100

At least one question should be Comprehension type.

There should be questions seeking case study analysis.

Answers on problem resolutions should be divided in four parts as following.

- Problem identification
- Relate problem resolution with appropriate government & company rules and regulations
- Strategies & Suggestions for problem resolutions
- Methods for strategy implementation, monitoring and evaluation

# Nepal Telecom

Level: 9<sup>th</sup>                      Post: Deputy Manager  
Group: Technical              Sub Group: Engineering

## **A. Services**

### 1. Introduction

- 1.1. General concept on National Telecommunication Planning
- 1.2. Importance of Telecommunication in National development
- 1.3. Social & Cultural aspects of Telecommunication
- 1.4. Relevance of global information network
- 1.5. Global trends in Telecom Development
- 1.6 Convergence of Services and Technologies

### **2. Telecom Services**

- 2.1 Millennium Development Goals
- 2.2. Services demand & supply status in Nepal & SAARC Region
- 2.3. Services' Forecasting Methods
- 2.4. Key Performance Indicators of Services from Consumers Perspective
- 2.5 Telecommunication system analysis and planning
- 2.6. Numbering Plan
- 2.7. Telecom Services' Charging & Billing Systems
- 2.8. Telecom business support systems (BSS)
- 2.9. VAS in telecom
- 2.10. Point of Interconnection & Interconnection services
- 2.11. Mediation services

### **3. Concepts of Telecommunication economics**

- 3.1 Fundamentals of Electronic Commerce
- 3.2. Internet and networking economics
- 3.3 Tariff and market segmentation concepts

## **B. Technologies**

### 4. Telecommunication Systems and Engineering Design

- 4.1 Wireless systems
  - 4.1.1 Satellite Communication
  - 4.1.2. Microwave/Ultra High Frequency (UHF)
  - 4.1.3. Cellular (GSM, CDMA, LTE)
  - 4.1.4. Emerging technologies

### **4.2. Wireline systems**

- 4.2.1 .PSTN
- 4.2.2. Optic fiber
- 4.2.3. LAN, WAN, MAN
- 4.2.4. Broadband Cable
- 4.2.5. Copper cable network

## **5. Voice systems**

- 5.1. TDM based Transmission and Switching systems
- 5.2. Multiplexing techniques
- 5.3. Signaling & protocols
- 5.4. Alerting & supervision
- 5.5. Call traffic engineering (Erlang, grade of service, jitters, routing)
- 5.6. Network optimization

## **6. Data systems**

- 6.1. IP Transmission systems
- 6.2. Digital Multiplexing
- 6.3. Broadband technologies –XDSL, ATM, SONET
- 6.4. VoIP, IPTV
- 6.5. Wireless broadband- WiMAX, Wi-Fi, Hotspot.2, EVDO, WCDMA, LTE
- 6.6. FTTH, EPON, GPON

## **7. Internet system**

- 7.1. Internet and World Wide Web, Web .2, Web.3
- 7.2. Protocols used in network and applications
- 7.3. IPV4, IPV6
- 7.4. Privacy and security issues

## **8. Digital Networks**

- 8.1. Architecture
- 8.2. Network components
- 8.3. Framing-E1, STM
- 8.4. Channelization and signaling
- 8.5. Digital voice and video
- 8.6. Packet and Switched services-ATM, xDSL,
- 8.7. Encryption and security issues

## **9. Radio spectrum management**

- 9.1. Spectrum management principles & Pricing
- 9.2. National spectrum management policies
- 9.3. Equipment Authorization and monitoring
- 9.4. Spectrum measurements and monitoring
- 9.5. General methodology for approval of transmitting and radiating equipment
- 9.6. Engineering spectral analysis and interference resolving

## **10. Power supply system**

- 10.1 Basic Power supply in telecommunication
- 10.2. Basic rectifier principle
- 10.3. Type of rectifiers
- 10.4. Basic Generator principles
- 10.5. Solar power system
- 10.6. Battery Technologies, Power System
- 10.7. Environmental Control Systems: air-condition, humidifier/ dehumidifier



- 10.8. Backup Power & Load shedding management
- 10.9. Alternative energy
- 10.10. Earthling, lightning Arrestor / Surge protection
- 10.11. Green energy in telecom
- 10.12. Emerging Technologies

### **C. Operation, Maintenance & Quality Assurance in Telecom network & service**

- 11. Network & service quality
  - 11.1 Network Availability
  - 11.2. Traffic Analysis & Monitoring reports
  - 11.3. Network performance indicator
  - 11.4. Development of efficiency indicators for operators
  - 11.5. Quality of service in telecom services (basic telecom, mobile service, internet and VAS)
  - 11.6. Number portability and its scope in service delivery
  - 11.7. Telecom infrastructure sharing, principles, impact, benefits, readiness in Nepal

### **12. Operation & Maintenance**

- 12.1. Structure for O&M, monitoring and support
- 12.2. Setting Objectives and key Indicators for O&M
- 12.3. Operation Support Systems (OSS)
- 12.4. Trouble ticketing, escalation of maintenance services
- 12.5. Safety and Maintenance of Telecom Networks
- 12.6. Fault analysis
- 12.7. Typical fault rates of network components & power equipments
- 12.8. Spares dimensioning basis & Inventory Control
- 12.9. Network operation centre- its role and importance
- 12.10. Customer Care Centers and its role & importance
- 12.11 Managed service outsourcing in telecom sector
- 12.12 Preventive & corrective maintenance

### **D. Information Systems Management**

- 13.1 Types of information Systems, their importance in Telecom Sector
  - a) Management Information System
  - b) Decision Support System
  - c) Executive Information System
  - d) Enterprise Resource Planning (ERP) System
  - e) Database Management System

### **13.2. Information Security: Detection and Protection**

- a) Intrusion Detection Systems and approaches for defending
- b) Types of Malicious software and defending against them
- c) Information Security Policy and role of Information Security Officer

### **13.3. Business Analytics in Telecom Industry**

- a) Business Intelligence and its variances
- b) Data model for Telecom Business

#### **13.4. Data center management**

- a) Types of data centers
- b) Major components of data center (power, air condition, building management system)
- c) Low density and high density server racks
- d) Data Warehouse and Data Mart