

# नेपाल विद्युत् प्राधिकरण

प्राविधिक सेवा, कम्प्युटर ईन्जिनियरिङ्ग समूह, तह-८ सहायक प्रबन्धक पदको  
प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

१. लिखित परीक्षाको विषय, पूर्णाङ्क, परीक्षा प्रणाली, प्रश्नसंख्या, अंकभार र समय निम्नानुसार हुनेछ ।

पत्र	विषय	पूर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या	प्रति प्रश्न अंकभार	समय
प्रथमपत्र	सेवा सम्बन्धी	७०	विषयगत	छोटो उत्तर	८	५
				लामो उत्तर	३	१०
द्वितीयपत्र	व्यवस्थापकीय ज्ञान	३०	विषयगत	छोटो उत्तर	३	५
				समस्या समाधान	१	१५

२. प्रथमपत्र र द्वितीयपत्रको परीक्षा २ पटक गरेर हुनेछ । प्रथमपत्रको परीक्षा सकिए पछि द्वितीयपत्रको परीक्षा तत्काल हुनेछ ।
३. परीक्षाको माध्यम नेपाली वा अंग्रेजी भाषा हुनेछ ।

## प्रथमपत्र : सेवा सम्बन्धी

### 1. DIGITAL ELECTRONICS

Number System, basic arithmetic of binary numbers, signed and unsigned, Gray codes, Error codes, BCD codes, Logic gates, truth tables, Boolean algebra, Demorgan's law, Karnugh map, Combinational digital circuits, memory, flip flop, registers

### 2. COMPUTER ARCHITECTURE

Classification of computers, RISC and CISC computers, Arithmetic logic unit, Addressing modes, Memory system, I/O organization in Microcomputer.

### 3. (a) DATA COMMUNICATION

Analog and Digital signals modulation in analog and digital communication, OSI 7 layers.

### (b) COMPUTER NETWORK

Types of networking, topologies, types of media, Layers, Protocols,

### (c) NETWORK ADMINISTRATION GENERAL INTRODUCTION

Hubs, Bridge and Routers, TCP/IP Network, IP address and Network mask, Network traffic analysis, Protocols used in TCP/IP, Proxy and DHCP concept in TCP/IP Network.

### 4. SOFTWARE ENGINEERING GENERAL INTRODUCTION

Information System and Modern System Analysis Technique, System Development Lifecycle, Object oriented Software Development, Client Server Computing, Software testing Software validation technique.

### 5. ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

- Concepts of artificial intelligence.
- Overview of knowledge-based and expert systems.
- Logic programming.
- Programming languages (LISP and Prolog) for AI and expert system implementation.
- Knowledge representation.
- Rule-based and object-based systems.

### 6. INFORMATION SECURITY

Classification of Data from security point of view, Risks of data loss, Security methods to be adopted (Operation Security, Backup of data, Data Access through login, Protection against viruses), Security principle of an organization.

## **7. OPERATING SYSTEMS**

Singleuser and Multiuser operating System, Basic concept on UNIX and Windows NT.

## **8. DATABASE MANAGEMENT SYSTEMS**

Entity relationship diagram, Data Flow Diagram, Normalization, Structured Query Language,

## **9. MANAGEMENT INFORMATION SYSTEMS**

Components of MIS, Function of MIS department, Introduction of Information Systems, Types of Information Systems, Components of information Systems, Introduction of Information Technology and its components, Potential dangers from use of computer systems.

## **10. COMPUTER PROGRAMMING**

Types of programming languages, Introduction to Structured Programming, Software reliability, software quality and maintenance, Object oriented programming (Inheritance, Encapsulation, Polymorphism, Class)

## **11. LATEST TRENDS AND TECHNOLOGIES**

- RFID technology and its usage
- Wi-Fi (Wireless internet) technology, how it works, its frequency band and bandwidth
- Gigabit Ethernet
- Fiber optics communication technologies and its implementation
- IP V6 concepts
- Bluetooth technologies and its implementation
- Grid computing
- Technology behind E-payment and E-transaction – ATM, Point of Sales, Internet Transaction Digital Signature etc.
- Bio informatics, image processing.
- VSAT, G3

## **12. ICT POLICIES, ACTS AND REGULATIONS IN NEPAL**

- IT Policy of Nepal
- Electronic Transaction and Digital Signature Act of Nepal
- IPR of Nepal
- Cyber Crime

## **द्वितीयपत्र : व्यवस्थापकीयज्ञान**

### **1. POWER SECTOR DEVELOPMENT AND INSTITUTIONS INVOLVED:**

History of power development in Nepal, Energy demand supply trends, Challenges and prospects of hydropower development, Importance of power exchange agreement with India, Scope of power exchange with other countries, Coordination between stakeholders in power sector, Scope for export oriented development of power sector, NEA's mission and objectives, Basic trends in NEA development, Policies and programs of NEA, Financing of NEA, Indicators of NEA financial performance, NEA rules and regulations on employment, procurement and promotions, Inventory control, Impediments for growth and possible reform measures, Role of Government institutions involved in power sector development, Role and importance of IPPs, Major projects under implementation and planning.

### **2. LEGAL PROVISIONS FOR POWER SECTOR DEVELOPMENT:**

Hydropower Development Policy, 2058, Water Resources Act, 2049, Electricity Act, 2049, Electricity Regulation, 2050, Nepal Electricity Authority Act, 2041, Environment Protection Act, 2053, Environment Protection Regulation, 2054, Electricity Pilferage Control Act, 2058, Electricity Pilferage Control Regulation, 2059.

### **3. ENGINEERING ECONOMICS:**

Cash flow analysis, Project evaluation indicators, Payback period, Criteria for capital investment decision, Risk analysis, Taxation system in Nepal, Energy tariff and regulatory issues.

**4. PROJECT MANAGEMENT:**

Project Planning and Scheduling: Network models, CPM/PERT, Manpower leveling, Material scheduling, Project preparation for implementation and justification of the project.  
Project monitoring and control: System of control, Project control cycle, Feedback control systems, Cash control.

Capital Planning and Budgeting: Capital planning procedures, Preparation of operating budgets, fixed and flexible budget, budgetary control.

**5. ORGANIZATION AND MANAGEMENT:**

Internal Organization, Management Information System, Motivation, Leadership and team work, Decision making, Corporate planning and strategic management, Job description, Job analysis, Performance appraisal, Auditing and inventory control, Personnel Management, Familiarization with procurement guidelines and standards of World Bank, ADB, Preparation of Contract documents, specifications, condition of contract and other contractual procedures.

**B. समस्या समाधान :**

व्यवस्थापकीय कार्यसंग सम्बन्धित कुनै एउटा समस्या दिईनेछ । प्रचलित ऐन नियमको परिधि र अवस्था समेतलाई विचार गरी दिइएको समस्याको निम्न आधारमा उपयुक्त समाधान र सुझाव प्रस्तुत गर्नु पर्नेछ ।

(१) समस्याका खास खास कारणहरू दर्शाउने ।

(२) समस्या समाधानका लागि सुझावहरू प्रस्तुत गर्ने ।

(३) प्रस्तुत सुझावहरू कार्यान्वयन गर्दा त्यसबाट पर्न सक्ने सकारात्मक प्रभावहरू उल्लेख गर्ने ।

**दृष्टव्य:** पाठ्यक्रममा राखिएका संविधान, ऐन, नियम र विनियमहरू परीक्षा हुनु भन्दा ३ महिना अगाडी सम्म संशोधन वा खारेज भई त्यसको सट्टा हाल प्रचलनमा रहेकालाई सोही अनुरूप पाठ्यक्रममा समावेश भएको मानिने छ ।

