

Nepal Telecom

Nepal Doorsanchar Company Ltd.

Syllabus for written examination for Free / Internal competition for Engineer

level 7. (Tech)

Summary of Syllabus

1. A. Syllabus for level 7, Engineers: Free / Internal competition is divided into two parts (Part I & Part II)
 - B. Part I: (General Module) This part is common for Electronics & Communication, Computer, Electrical, Mechanical & Civil Engineer.
 - C. Part II: (Specialized Module)
 - Electronics & Communication
 - Computer
 - Electrical
 - Mechanical
 - Civil
2. A candidate is required to answer questions from both part I & part II. Part I is compulsory for all. Candidate have to choose one from among 5 groups of part II.
3. weightage
 - i. Part I (General module) : 35%
 - ii. Part II (Specialized Module) : 35%
 - iii. Interview : 25 %
 - iv. Qualification : 5 %
4. The allocated marks for each chapter of subject shall be as per the weightage range given in the syllabus.
5. The types of question & allocated marks for Part I General Module and Part II specialized module shall be as follows:

5.1 Part I (General Module)

Types of question	Section A	Section B	Number of questions	Marks	Total Marks	Remarks
Objective Questions	20	10	30	1	30	1/4 marks will be deducted for each incorrect answer
Short Questions	6	4	10	4	40	
Long Questions	2	1	3	10	30	
					100	

5.2 Part II (Specialized Module)

Types of question	Number of questions	Marks	Total Marks	Remarks
Objective Questions	30	1	30	1/4 marks will be deducted for each incorrect answer
Short Questions	10	4	40	
Long Questions	3	10	30	
			100	

The marks obtained shall be converted to its real weightage as mentioned in item 3.

6. The duration of written examination of level 7, Engineers for free / Internal competition shall be of 2 hours for each part.
7. Use of non-programmable calculator is permitted in the examination hall.

Nepal Telecom

Nepal Doorsanchar Company Ltd.

Syllabus

Part I: (General Module) Compulsory Subject

(Common subject for Electronics & Communications, Computer, Electrical, Mechanical and Civil Engineer Level 7 Tech.)

Time: 2 hours

Full Marks: 100

Pass Marks: 40

Part I: (General Module) All the Questions are Compulsory

Types of question	Section A	Section B	Number of questions	Marks	Total Marks	Remarks
Objective Questions	20	10	30	1	30	1/4 marks will be deducted for each incorrect answer
Short Questions	6	4	10	4	40	
Long Questions	2	1	3	10	30	
					100	

Use of non-programmable calculator is permitted in the examination hall.

Section "A" (Technical)**1 Mathematics and Statistics: (Weightage 5% -15%)**

Function and Limit, Maxima and Minima, Differentiation and Integration and their interpretation, Equations of straight lines, circle, parabola, hyperbola, spheres, cylinders and cones, Linear differential equations (up to second order), Fourier series, Fourier Transforms, Fourier integral, inverse Fourier integral formula, odd and even function, Laplace transforms, Line, surface and volume integral, Taylor series, Zeros and Poles, Z-transforms

Introduction of statistics and descriptive statistics, Mean, Mode, Variance, Dispersion, Probability, Discrete random variables and probability distribution, continuous random variables and probability distributions, Samples, Sampling theorems, Linear regression, Population mean & sample mean and accuracy, pi & bar diagrams, error functions.

2 Applied Mechanics and Thermodynamics (Weightage 15%-25%)

Concept of equilibrium of particles, Force and position vectors, Conditions for equilibrium of a particles and a rigid body, Free body diagram, Moment of force and couple, Laws of friction, Simple trusses, Center of Gravity and Centroid, Moments of Inertia, Newton's laws and equation of motion, Translation, pure rotation and general plane motion of rigid body.

Boyles and Charles law of gases, Zeroth, First and second law of thermodynamics, Introduction to Entropy and enthalpy, Viscosity, specific gravity, specific volume, bulk modulus, Turbulent and laminar flow, Configurations and characteristics of centrifugal pumps and blowers, Viscous flow, The Bernoulli energy equation, the momentum equation and their applications. Internal combustion Engine, Refrigeration Systems, Heat transfer, Types of heat transfer.

3 Basic Electricity and Electronics (Weightage 15%-25%)

Circuit elements, series & parallel circuits, resistance, resistivity, Ohm's laws, Kirchoff's laws, Single phase & three phase circuit analysis, Measurement of current, voltage, power, energy, insulation resistance, Primary & Secondary cells, Cells in series & parallel, star & delta connections, Fundamentals of transformers, Generators and Induction motors, Electrical shock hazards, Earthing and shielding techniques for telecom equipments, Lightning protections.

Diode, Zener diode, LEDs, Transistors, PNP, NPN, FET, MOSFETS, Op-Amps, Integrated circuits, NMOS, CMOS, MOSFET amplifiers, Junction field effect transistor, quadratic characteristics, JFET Amplifiers, The bipolar transistor and its configurations, Load line biasing in CE configuration, Number systems, power supplies & voltage regulators, Half wave rectifier, full wave rectifier, Bridge rectifier, Logic gates: AND, OR, NOT, NAND, NOR

4 Information and Communications Technology Basics(Weightage 10%-20%)

Computer architecture, Microprocessor fundamentals, Microcomputer systems: Bus structure, Memory systems (main, auxiliary, virtual, cache, I/O devices, parallel and serial interfaces, RS-232 standards, Flow charts, algorithms, variables, constants, data types, arithmetic expression, arrays, Concept of ROM, RAM., MS-DOS, windows, MS-office packages, basic concept on internet and e-mail.

Communication systems: Amplitude Modulation, Frequency Modulation, Phase Shift Keying, Frequency Shift Keying, Data transmission over radio.

(End of Section "A")

Section "B" (Management, Finance & Rules Regulation)

1 Project Management (Weightage 5%-15%)

Definitions, the project life cycle, Setting project objectives & goals, Network model: CPM & PERT, Gant chart, Project scheduling, Resource leveling, Systems of Project control, Cost control, Preparation of operational budget, Introduction to budgetary control, Planning the quality, time & cost dimensions, Negotiating for Materials, Supplies & Services, Bringing the project to a Successful conclusion.

2 Economics and General Accounting Principles (Weightage 5%-15%)

Essential business & accounting terminology, Cost classification & analysis, Interest & time value of money, Basic methodology of engineering economic studies, cost and benefit analysis, risk analysis, investment decisions, demand analysis and sales forecasting, Basic knowledge of trial balance & Balance sheet, income statements, revenue and capital expenditure, budgeting and capitalization, depreciation and subsidy, Procurement procedures (FOB, CIF, Liquidated

Damage, Letter of Credit, Insurance, Invoice, Bid security, performance bond), Competitive bidding.

3 Management Concepts (Weightage 3%-7%)

Vision, Mission, Goal, Objectives, Targets, Strategies, Organization structure, Authority and Power delegation, Leadership, Motivation, Group dynamics, Time management, Conflict Management, MIS, Customer care, Decision support system, Out sourcing, Inventory control, Job description, training, service portfolio and tariff structure of Nepal Telecom.

4. ऐन, विनियमावलि, नीति नियम (Weightage 5%-15%)

नेपाल दूरसंचार कम्पनी लिमिटेडको कर्मचारी विनियमावली २०६१ को परिच्छेद-६ बिदा, परिच्छेद-८ आचरण तथा अनुशासन, परिच्छेद-१० सजाय र पुनरावेदन ।

नेपाल दूरसंचार कम्पनी लिमिटेडको आर्थिक विनियमावलि २०६१ को परिच्छेद-२ वार्षिक कार्यक्रम र बजेट, परिच्छेद-३ कम्पनीको सम्पत्तिको जिम्मा, त्यसको लगत, संरक्षण र बरबूभारथ, परिच्छेद-५- खरीद र प्राप्ती, परिच्छेद-६ बोलपत्र सम्बन्धि कार्यविधि ।

कम्पनी ऐन २०५३ को परिच्छेद-२ कम्पनीको स्थापना, परिच्छेद-६ संचालक समिति ।

दूरसंचार नीति २०६० ।

दूरसंचार ऐन २०५३ को परिच्छेद-७ दूरसंचार लाइनको जडान र रेखदेख, परिच्छेद-८ सेवा शूलक निर्धारण तथा असूली, परिच्छेद-११ विविध, दफा ४९ रेडियो फ्रिक्वेन्सि नीति निर्धारण सम्बन्धि व्यवस्था ।

सूचना प्रविधि नीति ।

द्रष्टव्यः प्रश्नहरूसंग सम्बन्धित नीति, ऐन, नियम, विनियमावलीहरु परीक्षा मिति भन्दा ३ महिना अघि सम्म संशोधन भई कायम रहेको व्यवस्था लागु हुनेछ

(End of Section "B")