

Nepal Telecom
Nepal Doorsanchar Company Ltd.
Syllabus for Power Supervisors (Electrical) Level 5
(Free Competition)

Full Marks: 100

Pass Marks: 40

Time: 3 hours

All the questions are Compulsory

Types of question	Numbers of questions	Marks	Total Marks	Remarks
Objective Questions	30	1	30	¼ marks will be deducted for each incorrect answer
Short Questions	10	4	40	
Long Question	3	10	30	
Total			100	

1. Basic Science

(Weightage 5-15%)

Basic Units and Measurements, Newton's Laws of Motion. Work, Energy and Power, Gravitation. Heat and Thermodynamics, Light and Illumination, Reflection and Refraction in Plane, Lens and Prism, Magnetic Fields.

Atomic Weight, Molecular Weight, Equivalent Weight, Atomic Structure, Periodic Table, Oxidation and Reduction, Electrolysis, Electronic Theory of Valency.

2. Basic Electricity, Electronics and Electrical Machines:

(Weightage 35-45%)

Electric Current, EMF and Voltage, Ohm's Law, Resistance, Inductance Capacitance, Transformers, Three Phase Circuits, Series and Parallel Circuits, Star-Delta, Delta-Star Conversions, Open and Short Circuits, Electric Power, Kirchhoff's

Laws of Voltage and Current, Faraday's Law of Electromagnetic Induction, Lenz's Law, Self Inductance, Mutual Inductance, Inductance in Series and Parallel, Energy Stored in Coil, AC and DC Voltage, Generation of AC Voltage, Instantaneous, Average and RMS Values, Phase and Phase Difference, AC Circuit Analysis, Resonance in AC Circuits.

Semiconductors, Junction diode, Transistors, Transistors as Switch, Thyristors, Operational Amplifiers, Logic Gates: AND NAND, OR, NOR, EX-OR, EX-NOR gates, FET, JFET, MOSFET, CMOS.

DC Motors: Losses, Efficiency, Speed Control,

Single Phase Induction Motors: Capacitor Start and Run Motors,

Three Phase Induction Motors: Working Principle, Slip, Reversing the Direction of Rotation, Starting Methods, Speed Control,

Synchronous Generators: Principal of Operation, Voltage Regulation,

Synchronous Motors: Principal of Operation, Starting Methods,

Distribution Transformers: Transformers Losses, Transformer Ratio.

3. Power Supply System:

(Weightage 20-30%)

Block Diagram of Telecom Power Supply System, Function of Each Block Diagram, Solar Power Supply System, Earthing System, Stand by Diesel Generators and Control System, Automatic Transfer Switch (ATS), SMPS.

Rectifiers: Full Wave Rectifier, Half Wave Rectifiers, Bridge Rectifier, Filter Circuits, Charging in Float Mode and Boost Mode, Single and Three Phase Rectifiers, Inverter, UPS, Batteries: Conventional and Maintenance Free Valve Regulated Lead Acid Batteries, Battery Charging and Discharging Characteristics, Deep Discharge, Battery Life, Internal Resistance of Battery, Source of EMF, Electricity Generation, Dangers of Electricity Shock Hazards, Earthing, Surge Protection, Lightning Protection, MOV Surge Suppressor.

4. Electrical Design, Protection, Cost Estimation, Utility & Measuring Instruments:

(Weightage 5-15%)

Wiring Layout for Commercial Buildings, Electrical Installation System, Power Cables, Distribution Switch Boards, MCB, MCCB, Fuses, ELCB, Insulation, Different Lighting Systems.

Protective Relays, Circuit Breakers, Generator Protection System, Transformer Protection Systems, Magnetic Contractors.

Voltmeter, Ammeter, Ohm-Meter, Oscilloscope, Galvanometer, Earth Resistance Tester, Megger, Wattmeter, AC/DC Clamp-meter, Sensitivity of Voltmeter, Principal of Current Shunt and Voltage Multiplier.

5. Installation, Operation Management & Safety Engineering:

(Weightage 3-7%)

Installation materials, use of standard installation materials, Safety measures, Operation Standards, Preventive Measures, Measuring Methods, Record keeping, Inspection and Quality Control

Safety management in Installation, operation & Maintenance of Power Equipments.

६. ऐन विनियममावली, नीति नियम

(Weightage 5-15%)

नेपाल दूर संचार कंपनी लिमिटेडको कर्मचारी विनियमावली २०६१ को परिच्छेद-६ विदा, परिच्छेद-८ आचरण तथा अनुशासन, परिच्छेद -१० सजाय र पूनरावेदन ।

नेपाल दूर संचार कंपनी लिमिटेडको कर्मचारी विनियमावली २०६१ को परिच्छेद-२, वार्षिक कार्यक्रम र बजेट, परिच्छेद- बभ्रू वृभ्रारत, परिच्छेद-५, खरिद र प्राप्ती, परिच्छेद -६ बोलपत्र सम्बन्धि कार्यविधि ।

कंपनी ऐन २०५३ को परिच्छेद-२ कंपनीको स्थापना, परिच्छेद-६ संचालक समिति ।

दूरसञ्चार नीति २०६० ।

दूरसञ्चार ऐन २०५३ को परिच्छेद -७ दूरसंचार लाइनको जडान र रेखदेख, परिच्छेद -८ सेवा शुल्क निर्धारण तथा असुली, परिच्छेद-११ विविध, दफा ४९ रेडियो फ्रिक्वेन्सी नीति निर्धारण सम्बन्धि व्यवस्था ।

सूचना प्रविधि नीति ।

प्रश्नहरु सम्बन्धित नीति, ऐन, नियम, विनियमावलीह

Nepal Telecom
Nepal Doorsanchar Company Ltd.
Syllabus for Power Supervisors (Refrigeration / Air Condition) Level 5
(Free Competition)

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Pass Marks: 40

Time: 3 hours

All the questions are Compulsory

Types of question	Numbers of questions	Marks	Total Marks	Remarks
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Total			100	

1. Basic Electricity

(Weightage 15-25%)

Ohm's Law, Resistance, Resistance in Series and Parallel Connections, Capacitors, Capacitors in Series and Parallel Connections, Lead Acid Batteries , Maintenance Free Batteries, Batteries in Parallel and Series Connections, Alternating Voltage and Currents , Phase and Phase Difference, Phase Sequence, Types of Motors, Types of Fuses, MCCB, MCB, Types of Cables, Voltage, Voltage in Stars and Delta Connection Current in Stars and Delta Connections, Working Principle of Transformer, Types of Transformer, Working Principle of Stabilizer, Types of Stabilizers, Basic Winding of Single Phase and Three Phase Motors.

2. Basic Thermodynamics & Mechanics:

(Weightage 5-15%)

Concepts of Heat, Concepts of Temperature, Concepts of Works, Thermodynamic Process, Ideal Gas Equations, Boyle's Law, Charles Law, Laws of Thermodynamics, Carnot Cycle, Otto Cycle, Diesel Cycle, Rankine Cycle.

Vector and Scalar Quantity, Composition of Forces and Resultant, Parallelogram Law of Forces, Moment of Force, Law of Friction, Equilibrium of Body, Center of Gravity.

3. Engineering Drawing & Workshop & Measuring Instruments :

(Weightage 5-15%)

Basic Drafting Techniques, Drawing and Interpretation of the simple object with necessary dimensions and scale, Plan, Elevation and Side View of the drawing and room layout standard symbols used in electrical and mechanical drawings.

Basic concept of workshop safety rules, Types of metal joining, Gas Welding, Arc Welding.

Millimeter, Voltmeter, Clamp Meter, Gas Welding, Soldering Gauge, Flaring Tools, Different Types Mechanical Tools.

4. Refrigeration & Air-Conditioning:

(Weightage 40-50%)

Basic concepts of Refrigeration, Basic mechanical refrigeration cycle, Basic components of refrigeration, Compressors and its types, Evaporators and its types, Condenser and its types, Types of Refrigerant Flow Control Devices, Classification Of Refrigerants, Domestic Refrigeration, Commercial Refrigeration Systems Absorption Refrigeration, Method of Heat Transfer, Types of Insulations,

Introduction to Air Conditioning System, Basic Components of Air Conditions Systems, Basic Concept of The Psychometric Properties (Air, Dry Air Moist Air Water Vapor Dry Bulb Temperature, Wet Bulb Temperature, Humidity, Sensible Heat), Basic Construction and used of Psychometrics Chart, Types of Air Conditioning System, Air Filters and its Types, Humidifiers and its Types, Types of Fans, Air Distribution Systems, Different Types Air Conditions Systems.

Difference between Air Conditioning systems and Refrigeration system, Operation and maintenance of Air Condition Units, Automatic and Manual Operation of Air Condition System.

5. Installation, Operation Management & Safety Engineering: (Weightage 3-7%)

Installation materials, use of standard installation materials, Safety measures, Operation Standards, Preventive Measures, Measuring Methods, Record keeping, Inspection and Quality Control

Safety management in Installation, operation & Maintenance of Refrigeration & Air Condition systems.

६ ऐन विनियममावली, नीति नियम

(Weightage 5-15%)

नेपाल दूर संचार कंपनी लिमिटेडको कर्मचारी विनियमावली २०६१ को परिच्छेद-६ विदा, परिच्छेद-८ आचरण तथा अनुशासन, परिच्छेद -१० सजाय र पूनरावेदन ।

नेपाल दूर संचार कंपनी लिमिटेडको कर्मचारी विनियमावली २०६१ को परिच्छेद-२, वार्षिक कार्यक्रम र बजेट, परिच्छेद- बभ्रू वृभारत, परिच्छेद-५, खरिद र प्राप्ती, परिच्छेद -६ बोलपत्र सम्बन्धि कार्यविधि ।

कंपनी ऐन २०५३ को परिच्छेद-२ कंपनीको स्थापना, परिच्छेद-६ संचालक समिति ।

दूरसञ्चार नीति २०६० ।

दूरसञ्चार ऐन २०५३ को परिच्छेद -७ दूरसंचार लाइनको जडान र रेखदेख, परिच्छेद -८ सेवा शुल्क निर्धारण तथा असुली, परिच्छेद-११ विविध, दफा ४९ रेडियो फ्रिक्वेन्सी नीति निर्धारण सम्बन्धि व्यवस्था ।

सूचना प्रविधि नीति ।

प्रश्नहरु सम्बन्धित