

# NEPAL TELECOM

Nepal Doorsanchar Company Ltd.

## Syllabus

Syllabus for Free Competition written examination for Assistant Engineer (Telecom)  
(Level 6)

Full Marks: 100

Pass Marks: 40

Time: 2 hours

### **Part II** **(Subject for Switching group)**

Types of Questions	No. of Questions	Marks	Total	Remarks
Objective	30	1	30	1/4 marks will be deducted for each incorrect answer
Short-Answer Questions	10	4	40	
Long-Answer Questions	3	10	30	

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

#### 1. Basic Electronics

**(Weightage: 15-25%)**

Diodes: Zener diode, Light emitting diode, Filters, Transistor: NPN and PNP transistor, common emitter transistor, common collector transistor, common-base transistor, field effect transistor (FET), Rectifier: Half-wave rectifiers, Full-wave rectifiers, Type of amplifiers, R-C coupled amplifiers, L-C coupled amplifiers, Feed back amplifiers, Oscillators: Sinusoidal Oscillators, Transistor Oscillators, Types of transistor Oscillators, Modulation and demodulation: Amplitude Modulation, Frequency Modulation, Demodulation.

#### 2. Digital Principles:

**(Weightage: 5-15%)**

Decoders: Alpha numeric displays, Decimal decoders, Seven-segment decoders, Logic gates: OR AND, NOT, NOR, NAND gates, Logic circuits: The Half-adder, Full-adder, Parallel binary adder, Multi Vibrators: Four-bit binary counter, flip-flops, Decade counter, BCD counter, Encoding and decoding matrices, A/D conversion and D/A conversion.

#### 3. Electronics Instruments:

**(Weightage: 3-7%)**

Multi meter, Digital Multi meter, Cathode ray oscilloscope, General symbols  
Rectifier / charge controller and batteries.

#### 4. New Services (basic concept)

**(Weightage: 5-15%)**

Concept of packet switching, Internet, e-mail, ADSL, Next Generation Network..

#### 5. Transmission Basic

**(Weightage: 5-15%)**

PCM Systems, Sampling coding, decoding, Frame / multi frame alignment, time slot, Transmission Alarm System (AIS, Frame alignment loss, sync loss, BER).

**6. Switching Exchange**

**(Weightage:30-40%)**

General concept of Digital Switching, Switching evolution, Function of switching, R2 and SS7 Signaling, ISDN, MDF termination from switch, Call completion concept (with diagram), Types of exchanges used in NT, Switching hierarchies: Local, Tandem, Trunk switch, Traffic measurement and Busy Hour determination, Billing and Back-up, Blocking probability, Call loss, Erlang B formula, Time switching and space switching, Types of subscriber and components, Subscriber facilities, Subscriber line card, subscriber line testing, Acronyms.

**7. Secondary storage Device**

**(Weightage:5-15%)**

Usage of Tracks, Cylinders, Sectors and Head in the hard disk, Properties of Hard disk (Access time, Seek time, Throughput), Types of storage devices and their uses (Floppy disk, CD, CDR, CDRW, Pen drive), Windows operating system, File and Folder Management using windows, installing new fonts.