राष्ट्रीय प्रौद्योगिकी संस्थान दिल्ली

NATIONAL INSTITUTE OF TECHNOLOGY DELHI

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संस्थान)

(An autonomous Institute under the aegis of Ministry of Education (Shiksha Mantralaya), Govt. of India)

Plot No. FA7, Zone P1, GT Karnal Road, Delhi-110036, INDIA

दूरभाष/Tele: +9111-33861000, 1001, 1005, वेबसाइट/Website: www.nitdelhi.ac.in

F. No: NITD/01/Admn/606/2025-26   Dated: 12.12.2025

Pattern of Examination (Written Test and Proficiency Test) and Evaluation Criteria for all the Advertised Non-Teaching Positions vide Advt. No.: 08/2025

A. PATTERN OF EXAMINATION AND EVALUATION CRITERIA OF WRITTEN EXAMINATION (PART A, PART B, AND PART C):

1. Pattern of Examination and evaluation Criteria (Part A, Part B, and Part C):
   a. The written examination will consist of one paper divided into three parts:

Part	Type	Content	No. of Questions	Marks
A	Objective Type	General Knowledge Test	20	20
B	Objective Type	Domain Knowledge Test	60	60
C	Descriptive Type	Assessment of Practical and Experimental Knowledge	5	20
			85	100

2. Cutt-off / Merit Criteria:
   i. Cut-off / Merit will be drawn on the basis of marks obtained by candidates out of 100 marks in the written examination (Part A, Part B, and Part C).

   ii. Based on the merit as referred in Point 2 (i) above, candidates will be shortlisted in the ratio of 1:6 (i.e. a maximum Six candidates will be shortlisted for each advertised post), in order of merit, for each advertised post, subject to securing the following minimum qualifying marks in the written examination:
   a). UR / EWS: Minimum 60 marks out of 100 marks (60%)
   b). OBC: Minimum 55 marks out of 100 marks (55%)
   c). SC / ST / (PwD / PwBD): Minimum 50 marks out of 100 marks (50%)

3. Number of Questions and Marking Scheme:
   i. Written Test – Part – A shall consist of 20 questions, carrying 01 mark each, and therefore this Part shall be of maximum 20 marks. The evaluation shall be carried out as follows:
   a). 01 (one) mark will be awarded for each correctly attempted question.
   b). 0.25 marks will be deducted as negative marking for each incorrectly attempted question.
   c). No marks shall be awarded for any question that remains unattempted or left unanswered.

   ii. Written Test – Part – B shall consist of 60 questions, carrying 01 mark each, and therefore this Part shall be of maximum 60 marks. The evaluation shall be carried out as follows:
   a). 01 (one) mark will be awarded for each correctly attempted question.
   b). 0.25 marks will be deducted as negative marking for each incorrectly attempted question.
   c). No marks shall be awarded for any question that remains unattempted or left unanswered.

iii. Written Test – Part – C shall consist of 05 questions, carrying 04 marks each, and therefore this Part shall be of maximum 20 marks.
    a). No negative marking will be applicable in Part C.

4. Timing allotment for the examination (Written Examination):
   i. The Written Test (comprising Part A, Part B, and Part C) shall be of 2 hours and 30 minutes (150 minutes) duration for all the positions.

5. In case of bunching / bracketing of candidates in the result of the Written Test, the merit shall be decided in the following order:
   i. Desirable Qualifications: Candidates who possess the desirable qualification(s) prescribed for the post shall be given preference.
   ii. Age Seniority: If the tie remains unresolved, the candidate senior in age shall be given preference.
   iii. Alphabetical Order of Name: If the tie still persists, preference shall be given to the candidate whose name comes first in alphabetical order.
   iv. Draw of Lots: If all the above criteria fail to break the tie, the merit order shall be decided through draw of lots.

B. **PATTERN AND EVALUATION CRITERIA OF PROFICIENCY TEST:**

1. Proficiency Test:
   i. Candidates shortlisted in the ratio of 1:6 for each advertised post, as per the criteria specified in Point 2 under (A), shall be called to appear for the Proficiency Test.

2. The Proficiency Test shall carry a total of 50 marks and will be qualifying in nature, with the following qualifying marks:
   i. UR / EWS: Minimum 27.5 marks out of 50 marks (55%).
   ii. OBC / SC / ST / (PwD / PwBD): Minimum 25 marks out of 50 marks (50%).

3. Timing allotment for the examination (Proficiency Test):
   i. The Proficiency Test shall be of 1 hour (60 minutes) duration for all the advertised posts.

Sd/-
(Prof. (Dr.) Hitesh Sharma)
Registrar, NIT Delhi

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Syllabus of the Written Test (Part A, Part B and Part C) and the Proficiency Test for the Non-Teaching Positions Advertised vide Advt. No.: 08/2025

TECHNICIAN (ELECTRONICS & COMMUNICATION ENGINEERING), PAY LEVEL – 03

Written Test – Part – A (Objective Type – General Knowledge Test)   **20 Marks**

i. Maths & Numerical Ability: Average, Time and Work, Simple Interest, Compound Interest, Decimal Fractions, Problems on Numbers, Square Root and Cube Root, Time and Distance, Simplification, Numerical Computation etc.

ii. Logical Reasoning: Number Series Compilation, Missing Number Finding, Continuous Pattern Series, Matching Definitions, Missing Character Finding, Coding and Decoding, Logical Sequence of Words, Arithmetic Reasoning, Numerical Reasoning, Data Reasoning and Data Interpretation. etc.

iii. Language & Comprehension: Antonyms, Synonyms, Spelling Check, Common Error Detection, One word substitution, Grammatical error, Idioms and Phrases, Sentence Correction and Completion, Spotting Errors, Sentence Improvement, Sentence Formation, etc.

iv. General knowledge and Current Affairs: NEP 2020, Academic Bank of Credit, Indian Economy, Indian Polity, Indian Constitution, Indian Geography, Days and Years, Basic General Knowledge, Current Affairs, Important Government Schemes, etc.

v. Computer Fundamentals, MS Word, MS Excel, MS Power Point, Internet, Email System, etc.

Written Test – Part – B (Objective Type – Domain Knowledge Test)   **60 Marks**

i. Familiarization with the operation and use of the following instruments.

     a) Digital Multi-meter, Ammeters, Cathode Ray Oscilloscope (CRO), Function Generator, and Regulated Power Supply by taking readings of relevant quantities with their help.

ii. Plotting of V-I characteristics of a PN junction diode, Zener diode and LED.

iii. Measurement of the voltage gain in a single-stage CE amplifier circuit.

iv. Generation and Observation of the wave shapes for the following rectifier circuit

     a) Half-wave rectifier

     b) Full-wave rectifier

     c) Bridge-rectifier

v. Plotting of the wave shape of the following circuits

     a) Clipper

b) Clampers

vi. Measurement of voltage, frequency, time and phase using Digital Storage Oscilloscope (DSO).

vii. Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (XOR) gates.

viii. Realization of logic functions with the help of NAND or NOR gates.

ix. To design half adder, half subtractor, full adder and full subtractor circuits and verification of their operation

x. To design code converters and verification of their operation

xi. To use IC 741 (op-amplifier) as

a) Inverting and non-inverting amplifiers

b) Adder,

c) Integrator,

d) Differentiator

xii. Recognition and use of various types of connectors RJ-45, RJ-11, BNC, SCST, SMA, VGA, DP and HDMI.

xiii. Making of cross cable and straight cable and their testing with Local Area Network (LAN) Tester.

xiv. Identify the IP address (with commands) of a workstation and the class of the address and configure the IP Address on a workstation (in Windows and Linux (RHEL, CentOS)).

xv. To generate an Amplitude Modulated (AM) wave & calculate the modulation index. Also, Generate an Amplitude demodulated wave.

xvi. To implement Amplitude Modulation and Demodulation using MATLAB.

xvii. Physics, Chemistry, Mathematics and Computer Science up to 12th Standard

Written Test – Part – C (Descriptive Test – Assessment of Practical and Experimental Knowledge) **20 Marks.**

Candidates will be expected to explain the principles, operation, and applications of the following workshop instruments, tools, machines, and processes:

a) Familiarization with the operation and use of the following instruments, including taking relevant measurements:

- Digital Multimeter (all functions and connections)
- Ammeters (connections and readings)
- Cathode Ray Oscilloscope (CRO) / Digital Storage Oscilloscope (DSO) (full operation)
- Function Generator (full operation)
- Regulated DC Power Supply (full operation)

b) Recognition and usage of various types of connectors including RJ-45, RJ-11, BNC, SCST, SMA, VGA, DisplayPort (DP), and HDMI.

c) Color and number coding systems for resistors and capacitors.

d) Plotting the current-voltage (V-I) characteristics of a PN junction diode, Zener diode, and LED.

e) Measurement of voltage gain in a single-stage Common Emitter (CE) amplifier circuit.

f) Fabrication and observation of waveforms for the following rectifier circuits:
- Half-wave rectifier
- Full-wave rectifier
- Bridge rectifier

g) Plotting the waveforms of:
- Clippers
- Clampers

h) Measurement of voltage, frequency, time period, and phase angle using a Digital Storage Oscilloscope (DSO).

i) Verification and interpretation of truth tables for logic gates: AND, OR, NOT, NAND, NOR, and Exclusive OR (XOR).

j) Realization of logic functions using NAND or NOR gates.

k) Design and verification of operation of half adder, half subtractor, full adder, and full subtractor circuits.

l) Use of IC 741 operational amplifier as:
- Inverting amplifier
- Non-inverting amplifier
- Adder circuit

m) Generation of an Amplitude Modulated (AM) wave, calculation of modulation index, and generation of the corresponding demodulated wave using breadboard or kit setups.

n) Fabrication of cross cables and straight cables, and testing them with LAN testers.

o) Analysis and simulation of electrical circuits using PSPICE (or any open-source simulation software).

p) Configuration of IP address on workstations (Windows or Linux) via commands or GUI, and usage of basic command-line instructions in Windows (cmd) and Linux (RHEL, CentOS).

q) Maintenance of consumable and non-consumable stock registers.

r) Maintenance and usage of laboratory logbooks for various equipment.

s) Proper management and storage of laboratory components and instruments in their appropriate locations.

t) Basic knowledge of repair and preventive maintenance of laboratory equipment.

Proficiency Test (Skill Based Assessment of Practical and Experimental Knowledge)   50 Marks

i.   Experiments of general/ oral nature

a) Familiarization with the operation and use of the following instruments.

- Digital multi-meter (all operations and connections), Ammeters (connections & taking reading), CRO/ DSO (full operation), Function Generator (full operation), and Regulated DC Power Supply (full operation) by taking readings of relevant quantities with their help.

b) Recognition and use of various connectors i.e. RJ-45, RJ-11, BNC, SCST, SMA, VGA, DP and HDMI.

c) Colour/ number coding of Resistors/ capacitors.

ii.   Experiments of performing nature

a) Plotting of V-I characteristics of a PN junction diode, Zener diode and LED.

b) Measurement of the voltage gain in a single-stage CE amplifier circuit.

c) Fabrication and Observation of the wave shapes for the following rectifier circuit

- Half-wave rectifier
- Full-wave rectifier
- Bridge-rectifier

d) Plotting of the wave shape of the following

- Clipper
- Clampers

e) Measurement of voltage, frequency, time and phase using DSO.

f) Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (XOR).

g) Realization of logic functions with the help of NAND or NOR gates

h) To design half adder, half subtractor, full adder and full subtractor circuits and verification of their operation

i) To use IC 741 (op-amplifier) as

- Inverting and non-inverting amplifier
- Adder

j) To generate an Amplitude Modulated wave & calculate the modulation index and also Generate an Amplitude demodulated wave using a Breadboard/ Kit.

k) Making of cross cable and straight cable and their testing with LAN Tester.

l) Experiments of Performing Nature (Simulations/ Software)

m) Analysis/ simulation of the given circuit with PSPICE (Open source) software tool

n) Configure the IP address (with commands or Gui) on a workstation (Windows or Linux) and knowledge & use of basic commands in Windows (cmd) and Linux (RHEL, CentOS).

o) Performance Evaluation related to Laboratory Maintenance

p) Maintenance of consumable and non-consumable stock registers

q) Maintenance and usage of laboratory log books for using various equipment's.

r) Managing of storage of various components in relatable places.

s) Basic idea of repairing/ maintenance of laboratory equipment's.