



राष्ट्रीय प्रौद्योगिकी संस्थान, कुरुक्षेत्र
NATIONAL INSTITUTE OF TECHNOLOGY
(Under the Ministry of Education, Govt. of India)
KURUKSHETRA-136119

RECRUITMENT OF NON-TEACHING POSTS (REF.:ADVT. NO.:03/2023)

Name of the Post	:	Senior Technician (Level - 4) (Electrical Engineering)
Details of the Scheme & Pattern of Examination:	:	PART A: <ul style="list-style-type: none">Total Questions :100 (MCQ Type)Maximum Marks :100No Negative Marking Breakup <ul style="list-style-type: none">General Awareness (20)Reasoning (20)Mathematics (20)Test of English/Hindi Language (30)Computer Awareness (10) PART B: <ul style="list-style-type: none">Specialization (Electrical Engg.) : 30 Questions
Duration of Examination	:	2.5 hours

- The Question Paper shall be Bilingual (English & Hindi) except the Section for the Test of Language wherever applicable.
- The medium of Part-B will be English only.

SYLLABUS OF EXAMINATION

PART A

General Awareness: Includes questions relating to History, Indian Polity & Constitution, Art & Culture, Geography, Economics, General Policy, Science & Scientific Research, National/International Organizations/Institutions, current events, environment etc.

Reasoning: Includes questions relating to both verbal and non-verbal types, analogies, similarities, differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship, concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series etc.

Mathematics: Includes questions relating to Simplification, Decimals, Fractions, L.C.M., H.C.F., Ratio & Proportion, Percentage, Average, Profit & Loss, Discount, Simple & Compound Interest, Mensuration, Time & Work, Time & Distance, Tables & Graphs, etc.

Test of English or Hindi: In addition to the testing of candidate's understanding of the English or Hindi Languages, it's Vocabulary, Grammar, Sentence Structure, Synonyms, Antonyms and its correct usage etc. would also be tested.

Computer Awareness: Includes questions on Operating System, MS Office, MS Word, MS Excel, Power Point, Tally, Internet, E- mail, Antivirus and various online tools used in day- to-day office work.

PART B

o Electrical Engineering

Mathematics: Arithmetic, Geometric and Harmonic Progressions, Binomial expansion, Matrices, Elementary operations, Rank of a matrix Parabola, Ellipse and Hyperbola, Differentiation of a function, implicit function, parametric function. Successive differentiation. Maxima and Minima, Partial Differentiation, Definite and indefinite Integration. First order and first degree ordinary differential equations.

Physics: Units and Dimensions with Dimensional analysis and their Limitation, Motion in one and two dimensions and Newton's Laws of Motion. Work and Energy and Conservation Laws of energy, Properties of matter i.e. Elasticity, Surface tension and viscosity in fluent motion, waves and vibration. Characteristics of waves and Simple Harmonic Motion, Rotational Motion, Conservation on angular momentum, Gravitation, Newton's law of gravitation, Kepler's law and Satellite, Heat and temperature. Measurement of temperature and mode of transfer of heat and their laws, geometric optics and simple optical instruments, Simple Law of electrostatics and their use to find the E and potential. Capacitors and dielectric constant, Laser, its principle and use, Superconductivity, Conventional and Non-Conventional energy sources.

Elements of Electrical Engineering: Electrical and Magnetic circuits, EMF, Kirchhoff's law and Faraday's Laws, Network Theorems, AC circuit, RMS value Behavior of RLC elements, Series and parallel circuits, series and parallel resonance circuits, Transformers, Introduction to single phase and three phase transformers DC Machines, Theory, Constructions and Operation of three phase induction motors, Transmission and Distribution Advantages of high voltages for transmission, Comparison of 3 phase, single phase, 2 Phase and three wire D.C. Systems.

Elements of Electronic Engineering: Measurements & Instrumentations, Errors, standards, accuracy precision resolution, Ammeters, Voltmeters, watt meters Energy meters, insulation tester, multimeter, CRO, measurement of V, I & F on CRO low, medium & high resistance measurement, AC bridges Transducers for measurement of temperature, displacement, communication system, types of modulation, demodulation, Analog Electronics Semiconductor diode circuits, zener diode and zener diode circuits, LED, photo diode, BJT, FET & their configurations and characteristics Biasing, small signal and Large signal amplifier, OP-AMPS, oscillators, regulated power supply.

COMPUTER LITERACY: Characteristics of Computer, Computer Organization, Input/output Devices, Computer Software-Relationship between Hardware and Software, Operating Systems, MS-Office (exposure of Word, Excel/spread sheet, Power point). Digital Signature, Application of information technology in Government for e-Governance, mobile/Smartphone, Information tasks.

Note:- The Syllabus is suggestive and indicative in nature having only broader areas for reference. The Candidate is expected to have the holistic and expanded knowledge of the subject/syllabus.
