



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	:	Technician (Level - 3) <u>(Computer Engineering)</u>
Details of the Scheme & Pattern of Examination:	:	<u>PART A :</u> <ul style="list-style-type: none">• Total Questions :100 (MCQ Type)• Maximum Marks :100• No Negative Marking <u>Breakup</u> <ul style="list-style-type: none">○ General Awareness (20)○ Reasoning (20)○ Mathematics (20)○ Test of English/Hindi Language (30)○ Computer Awareness (10) <u>PART B :</u> <ul style="list-style-type: none">• Specialization (Computer Engineering): 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 Applications: 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:

○ **Computer Engineering**

Computer Organization and Architecture: Binary representation, registers, Instruction set, timing and control, CPU, instruction cycle, addressing modes, CISC, RISC, synchronization, interrupt and exception, privileged and non- privileged instruction, hierarchical memory organization, memory mapping, cache memory, coherence, consistency, virtual memory, interleaving, DMA, Signed number, fixed and floating point numbers, control unit design, arithmetic and instruction pipelining: throughput, speedup, branch prediction, hazards

Programming, Data Structures, Algorithms, and Theory of Computation: Programming in C, pointers, basic data structures, array, string, stack, queue, recursion, linear and non-linear data structures, searching and sorting algorithms, complexity and asymptotic analysis, Mealy and Moore machine, finite automata, Determinism and non-determinism, Regular expressions, minimization of deterministic finite automata PDA, regular grammar, CFG, Chomsky's hierarchy, closure properties, pumping lemma, Turing machine, halting problem

Operating System and Database Systems: Basics of Popular Operating Systems (Linux & Windows), File and Directory Management, purpose of database system, Data Models, ER-Model, Introduction to UML, keys, integrity rules, Relational Database design, Normalization, Selection and projection, Joins, SQL: data definition, aggregate function, Null Values, nested sub queries, joined relations, ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods

Computer Networks and Web technologies Basic of Computer networks; LAN, WAN, OSI reference model, TCP/IP, sliding window protocol, Channel allocations problem, Ethernet, Wireless LAN, Broadband Wireless, routing algorithms, Congestion control algorithms, IPv4 and IPv6, Quality of Service, UDP and TCP, Domain name system, electronicmail, World Wide

Web: architectural overview, dynamic web document and http, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet, Concept of Internet, Applications of Internet, Search Engines

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.
