राष्ट्रीय प्रौद्योगिकी संस्थान हमीरपुर
हमीरपुर (हि.प्र.) – 177 005 (भारत)
[भारत सरकार शिक्षा मंत्रालय के तहत एक राष्ट्रीय महत्व का संस्थान]
NATIONAL INSTITUTE OF TECHNOLOGY HAMIRPUR
HAMIRPUR (H.P.) - 177 005 (INDIA)
[An Institute of National Importance under Ministry of Education (Shiksha Mantralaya)]
{ OFFICE OF THE REGISTRAR }

NOTICE

Pursuant to the approval of the Competent Authority, the schedule for Written Examination of the eligible candidates for promotion to the various non-teaching posts against notice No. NIT/HMR/Admn/Promotion-2023/2023/801-808 is hereby notified as under:

Sr. No.	Post Cadre	Date	Reporting Time	Venue
1	Ministerial Cadre Posts	12th Feb., 2024	10:00 AM	Senate Hall, Admin. Block, NIT Hamirpur (HP)
2	Technical Cadre Posts	12th Feb., 2024	3:00 PM	

The scheme of written exam shall be as under:

1. There are 30 MCQ type questions in SECTION-I (MCQs) of the paper and each question is followed by four alternative answer options namely A. B. C and D out of which only one option is correct. You need to tick the correct one out of four options given.
2. For every correct answer of MCQ in **SECTION-I (For Ministerial & Technical Higher/Lower Cadres)** of the paper two (2) marks will be awarded and there shall be no negative marking.
3. A). In **SECTION-II (Descriptive) (For Technical Higher & Lower Cadres):** There are 20 descriptive type questions in of the paper and each question carries 02 marks. You need to write answer neatly with clarity of thoughts in maximum 2 – 3 lines at the space provided below each question.

   B). In **SECTION-II (Descriptive) For Ministerial Higher & Lower Cadres:** There shall be 08 Descriptive Type Questions and each question shall carry 05 marks with total 40 marks.
4. The Candidates will use only **BLUE** pen to answer all the questions.
5. Mobile Phones are strictly prohibited.
6. For rough work use the blank page given at end. No extra sheets shall be provided in any circumstances.
7. Use of Unfair means will lead to cancelation of candidature. Do not carry any loose paper.
8. Return the booklet to the Invigilator after completing the examination.

The Syllabus for the written exam shall be as per Annexure-I.

01/02/2024

REGISTRAR

No.NIT/HMR/Admn/Promotion-2023/2023/ 1678-80 Dated: 01-02-2024

Copy to:

1. Director for his kind information please.
2. Dean (P&D) for information.
3. FI(CC) for uploading the same on the Institute website.

Syllabus for wriiten test for promotional posts of Ministerial (Higher & Lower) Cadre, Personal Assistant and Senior Personal Assistant

1. Letter/Note Drafting.

2. Service Matters: FR &SR, LTC Rules, Leave Rules, CCS Conduct Rules, TA/DA Rules, Medical Attendance Rules, Disciplinary & Vigilance, RTI Act, Office Procedure, etc., DPC, Pay Fixation, Seniority, Legal Matters, Foreign Service, Deputation, New Pension Scheme.

3. Financial Administration: General Financial Rules (GFR), Elementary knowledge of Income Tax, Service Rules, GST Rules, knowledge of PFMS.

4. Public Procurement: Procurement of Goods and Services, GeM Rules and Procedures, Central Public Procurement Portal: Tendering, Procuring etc., Contract Management, Inventory Management, Procurement Manuals.

5. NIT Act and Statutes.

6. UG, PG and Doctoral Ordinances of NIT Hamirpur.

Syllabus for Technical Assistant SG-I(Level-9) / SG-II (Level-8)

Introduction to Materials and Manufacturing Processes Engineering Materials, Classification and their Properties; **Metal Casting**, Pattern materials and pattern making, Metal Working: Hot Working and Cold Working, **Metal Forming:** Introduction to Extrusion, Forging, Rolling, Drawing;. **Machining using Lathe**: Lathe Operations: Types of lathes – light duty, Basic parts and their functions; Operations and tools–Turning, parting off, Knurling, facing, Boring, drilling, threading, step turning, taper turning; **Milling** Introduction; Types of milling machines: specifications; Milling operations; Milling cutters –types; work holding devices; **Drilling, grinding machines**: Grinding and finishing processes: Principles of metal removal by Grinding; **Introduction to welding, welding processes**: Classification; Gas welding techniques; Types of welding flames; Arc Welding –Principle, Equipment, Applications; Shielded metal arc welding; Submerged arc welding; TIG / MIG welding; Resistance welding - Spot welding, soldering ,Brazing ; Carpentry and sheet metal working; Introduction to Metrology and measurements.

Engineering Mechanics and Strength of Materials: Fundamental laws and applications; Concept of Strength, toughness, hardness; stress strain diagram for different materials; Helical springs and application; Kinematics and Dynamics of Machines: Link, pair, mechanism; Governors and applications; Cam and follower and applications; concept of Balancing; Flywheel, Machine Design: Power transmission shafts; Applications of : keys, splines, Cotter joint, rolling element bearings; Fundamentals and Applications of Gears; Types of fasteners and application, factor of safety.

Concepts of fluid and its types, forces by fluid at rest, pressure, ideal fluid, Bernoulli Equation, pressure and volume flow rate measurements, Reynolds number, hydraulic turbines, their types and basic operations, IC Engines, cycles and operation, testing of IC engines, modes of heat transfer, conduction, convection and radiation, basics of Refrigeration Air Conditioning

Written Test for the post of Technical Assistant SG-I (Promotion) at National Institute of Technology Hamirpur (HP)

Syllabus

1. **Surveying:** Experimentation on linear measurements, compass and theodolite, traverse surveying, leveling and contouring, plane tabling, total station, etc.
2. **Transportation:** Testing of highway materials, aggregates, bitumen, CBR, pavement design, etc.
3. **Construction materials:** Testing of stone, brick, fine and coarse aggregates, cement, concrete, NDT, timber, steel, RCC, etc.
4. **Environment:** Testing of water, pH, BOD, turbidity, hardness, etc.
5. **Fluid mechanics and hydraulics:** Tests on fluids.
6. **Soil mechanics:** Testing of soils, various tests, permeability specific gravity sieve analysis, compaction, etc.
7. **Instrumentation:** Current meter, dial gauge, wrench, proving ring, oven, etc.

Syllabus for Technical Assistant (SG-II) (Level-8): DoCSE

Computer components and Windows Operating System, Computer Hardware basics and Software Installation and troubleshooting, Familiarization with DOS CLI, Windows OS & Linux Operating Systems, OS configuration for different usage scenarios, Programming in C/C++, Python, MATLAB, Java Script, Use of Word Processing Software, Spread Sheet Application, Creating presentations and using Open Office, Database Management, Practical management of large databases, Configuring and Using Networks, Advanced network configuration of various network devices, Internet Concepts, Web Designing – HTML, CSS.

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Department of Electronics & Communication Engineering

Syllabus for Senior Technical Assistant

Introduction to various circuit elements resistance, inductance, capacitance, concept of current, voltage, power, energy, Introduction to Electronic Equipment's and Measuring Instruments : Understanding and using ammeter, voltmeter, multimeter, oscilloscopes, and signal generators. Power Supplies, Function Generators, DSO, Setting up and operating power supplies.

Microwave Bench Experiments: Setup and calibration of X-Band microwave benches. Measurement of microwave parameters. Microwave Sources Operation and characteristics of Klystron and Gunn Diode sources. Experiments with microwave sources.

Circuit Design: Basic Electronics Circuits, Basic working of Diode, Zener diode, Tunnel Diode, Bipolar Junction Transistor, JFET, MOSFET, Voltage regulator, half wave rectifier, full wave rectifier, amplifier, oscillators, Designing and analyzing linear integrated circuits using operational amplifiers. Hands-on exercises with amplifier circuits, Implementing Digital Logic Circuits with gates, Karnaugh map, adder, subtractor, multiplexer, Flip Flop, Troubleshooting and testing combinational circuits. Knowledge of basic communication techniques.

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Syllabus for Written Test of Promotional Posts of Technician/Tech. Assistant (Electrical)

Introduction to various electrical circuit elements (resistance, inductance, capacitance etc.) and their combinations, different types of resistors & capacitors, Concepts of current, voltage, power, energy and their units, electric circuit laws, Ohm's law, Kirchhoff's Voltage Law (KVL), Kirchhoff's Current Law (KCL), DC and sinusoidal response of R-L and R-C circuits, Magnetic Circuit, Concepts of flux, Different kinds of magnetic materials.

Measurement of resistance through Multimeter, Measurement of resistance using Ammeter and Voltmeter, Introduction to Wheatstone Bridge, Measurement of unknown resistance using Wheatstone Bridge, Materials for fuse elements, Measurements of voltage and current using Multimeter, Identification of different electrical and electronic components (Diode, transistor etc.), AC Fundamentals, Instantaneous, peak, R.M.S. and average values of alternating waves, measurement of voltage, current, energy and power, concept of frequency and its measurement using Cathode Ray Oscilloscope (CRO).

Electromagnetic induction, concept of self and mutual induction, concept of frequency, Basics of Electrical Machines and Electrical generation, transmission and distribution, batteries and their series-parallel connections, simple wiring circuits for Domestic wiring, Simple wiring circuits for Domestic wiring, Earthing.

National Institute of Technology Hamirpur, Hamirpur, H.P-177005

Syllabus for Recruitment to the post of

Technical Assistant (Library) (Level-6)

1. **Library, Society and Management:** Laws of library science; types of libraries, library associations, systems and programmes, library movement and library legislation in India, organizations and institutions involved in the development of library and information services (UNESCO, IFLA, FID, INIS, NISSAT), types of documents and selection principles, acquisition procedure, acquisition of journals and periodicals, preparation of documents for use, library personnel and library committee, library rules and regulations, library finance and budget; principles of library management, library organisation and structure, circulation, maintenance, shelving, stock verification, binding and preservation, weeding out.

2. **Library Classification, Cataloguing, References and Information Sources:** Library Classification Schemes (DDC and CC), canons and principles, library cataloguing codes (CCC and AACR), reference and information sources, bibliography, dictionaries, encyclopedias, ready reference sources, sources of information such as primary, secondary, tertiary, documentary, non-documentary; e-documents, e-books, e-journals.

3. **Information Services and Technology**: concept and need for Information, nature and organization of information services, abstracting and indexing services, computer based information services (CAS and SDI), introduction to computers, use of computers in library housekeeping, library automation, software and software packages, IT/ICT fundamentals, word processing, spreadsheet and presentation, Library Networks (DELNET, NICNET, NISSAT, NASSDOC, INSDOC, DESIDOC).

Syllabus for Technician (SG-II)

Introduction to Materials and Manufacturing Processes Engineering Materials, Classification, and their Properties; **Metal Casting**, Pattern materials and pattern making, Metal Working: Hot Working and Cold Working,

Machining using Lathe: Lathe Operations: Types of lathes – light duty, Basic parts and their functions; Operations and tools–Turning, parting off, Knurling, facing, Boring, drilling, threading, step turning, taper turning; **Milling** Introduction; Types of milling machines: specifications; Milling operations; Milling cutters –types; work holding devices; **Drilling, grinding machines**: Grinding and finishing processes: Principles of metal removal by Grinding;

Introduction to welding, welding processes: Classification; Gas welding techniques; Types of welding flames; Arc Welding –Principle, Equipment, Applications; Shielded metal arc welding; Submerged arc welding; TIG / MIG welding; Resistance welding - Spot welding, soldering ,Brazing ;

Carpentry and sheet metal working; Introduction to wood working machines, sheet metal working devices and machines; various operations in sheet metal working **Introduction to forging**, types of operation in forging, Tools and devices used in forging shops.

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Syllabus (Written Test) for Promotion to the Post of Executive Engineer (Electrical)

Basic Electrical Engineering: Electrical circuit, circuit elements resistance, inductance & capacitance, Kirchhoff's laws, voltage source & current source, Network Theorems, duality, star-delta transformation. DC Transients AC circuits, periodic function, average & r.m.s. values, steady state behaviour with sinusoidal excitation, Phase representation, reactance & impedance, power and power factor, series & parallel circuit, resonance and quality factor, Principle of electricity generation of single phase & three phase voltages, Magnetic circuits, flux, mmf, reluctance, analogy with electric circuits, Simple calculations for composite magnetic circuits. Magnetic Coupling Coefficient Measurement of electrical current, voltage and energy in ac & dc systems, power in balanced three phase ac system, Batteries, Electrical wiring systems, Basics of electrical measuring instruments, need of calibration, Transducers.

Power systems: Elementary idea about bulk power generation, Hydro and thermal power plants and their layouts, long distance transmission and distribution, industrial and residential distribution, Overhead and underground power transmission, safety & legal standards, Basic sub-station layout, Protective Relays, Circuit Breakers, Earthlings, lightning arrestors.

Electrical Machines: Transformers, Basic principles, construction, phasor diagram for transformer under no load condition, transformer on load, equivalent circuit, open circuit & short circuit test, DC shunt and series motor – construction, principle of working and applications, need of starters, torque and speed control; Induction motors – construction, principle of working of single phase and 3-phase motors, torque- slip characteristics; Synchronous Motors and Generators.

Basic and Industrial Electronics: Intrinsic and extrinsic semiconductor, mobility, conductivity, Hall effect, Diode, its V-I characteristics, diode resistance, capacitance, Zener Diodes breakdown mechanism (Zener and avalanche), Diode Applications: Parallel and Series Diode Configuration, Half and Full Wave rectification, Clippers, Clampers, Zener diode as shunt regulator, Voltage-Multiplier Circuits. Light-Emitting Diodes, Varactor (Varicap) Diodes, Tunnel Diodes, Transistors and their characteristics, various operational configurations and applications, Basics of Amplifiers, Thyristors and their applications, Converters and inverter circuits, UPS.

Control Systems: Basic control configurations, mathematical modelling of systems, transfer function based models, concept of positive and negative feedback, stability analysis, time and frequency domain analysis, Compensator and controller design, PID controller.

Digital Electronics: Introduction to digital electronics, Number Systems, Conversion between various number systems, Basic Logic gates. Operational Amplifiers: Introduction, Differential Amplifier Circuits, Op-Amp Basic, Practical Op-Amp Circuits (Inverting Amplifier, Non-inverting Amplifier, Unit Follower, Summing Amplifier, Integrator, Differentiator), Differential and Common-Mode Operation.

Overview of a Computer System: Block diagram and major parts of a computer, history of computer development, introduction to binary, octal, & hexadecimal numbers, ASCII code, different levels of programming languages–machine language, assembly language, and high level language.