



భారతీయ సాంకేతిక విజ్ఞాన సంస్థ హైదరాబాద్  
भारतीय प्रौद्योगिकी संस्थान हैदराबाद  
Indian Institute of Technology Hyderabad

**Advertisement No. IITH/2023/NF/15 dated 22.10.2023**

Post Number	Post Name
<b>15.9</b>	<b>Junior Technician - Computer Center</b>

(The syllabus topics mentioned here are for illustrative purpose only)

<b>Computer Center</b>	
<b>Junior Technician (Networking)</b>	<b>1. Written Test</b> 01. 20 % Arithmetic, General English 02. 80 % for work-related topics. <b>2. Skill Test on work-related topics</b>
	<b>Syllabus for work-related topics.</b> <ul style="list-style-type: none"><li>• Network Administration</li><li>• Basic Computer Organization &amp; Architecture, Operating Systems</li><li>• Computer Networks &amp; Security</li><li>• Windows/Linux System Administration</li><li>• Basic C Programming and Python Scripting</li><li>• Basic Data Structures and Algorithms</li></ul>

<b>Junior Technician (Electrical)</b>	<b>1. Written Test</b> 01. 30 % Arithmetic, General English, General Awareness 02. 70 % for work-related topics. <b>2. Skill Test on work-related topics</b>
	<b>Syllabus for work-related topics.</b> <p><b>Electrical Engineering: Fundamentals</b> : Network Theorem and applications, Magnetic Circuit : mmf, reluctance, Different kinds of magnetic materials, Magnetic calculations for conductors of different configuration e.g. straight, circular, solenoidal, etc. Electromagnetic induction, self and mutual induction. AC Fundamentals: Instantaneous, peak, R.M.S. and average values of alternating waves, Series and parallel AC Circuits, RLC circuits, Poly Phase system – star and delta connection, 3 phase power, DC and sinusoidal response of R-L and R-C circuit.</p> <p><b>Measurement and measuring instruments:</b> Measurement of power (1 phase and 3 phase, both active and re-active) and energy, 2 wattmeter method of 3 phase power measurement.</p>

Measurement of frequency and phase angle.  
 Ammeter and voltmeter (moving coil, iron type), extension of range wattmeter, Multimeters, Megger, Energy meter AC Bridges. Use of CRO, Signal Generator, CT, PT and their uses. Earth Fault detection.

**Electrical Machines :** (a) D.C. Machine – Construction, Basic Principles of D.C. motors and generators, their characteristics, speed control and starting of D.C. Motors. Method of braking motor, Losses and efficiency of D.C. Machines.  
 (b) 1 phase and 3 phase transformers – Construction, Principles of operation, equivalent circuit, voltage regulation, O.C. and S.C. Tests, Losses and efficiency. Effect of voltage, frequency and wave form on losses. Parallel operation of 1 phase /3 phase transformers. Auto transformers. (c) 3 phase induction motors, rotating magnetic field, principle of operation, equivalent circuit, torque-speed characteristics, starting and speed control of 3 phase induction motors. Methods of braking, effect of voltage and frequency variation on torque speed characteristics. Fractional Kilowatt Motors and Single Phase Induction Motors: Characteristics and applications. Synchronous Machines : Generation of 3-phase e.m.f. armature reaction, voltage regulation, parallel operation of two alternators, synchronizing, control of active and reactive power. Starting and applications of synchronous motors.

**Generation, Transmission and Distribution :** Different types of power stations, Load factor, diversity factor, demand factor, cost of generation, inter-connection of power stations. Power factor improvement, various types of tariffs, types of faults, short circuit current for symmetrical faults. Switchgears – rating of circuit breakers, Principles of arc extinction by oil and air, H.R.C. Fuses, Protection against earth leakage /over current, etc. Buchholtz relay, Merz-Price system of protection of generators & transformers, protection of feeders and bus bars. Lightning arresters, various transmission and distribution system, comparison of conductor materials, efficiency of different system. Cable – Different type of cables, cable rating and derating factor.

**Estimation and costing :** Estimation of lighting scheme, electric installation of machines and relevant IE rules. Earthing practices and IE Rules.

**Utilization of Electrical Energy :** Illumination, Electric heating, Electric welding, Electroplating, Electric drives and motors.

**Basic Electronics :** Working of various electronic devices e.g. P N Junction diodes, Transistors (NPN and PNP type), BJT and JFET. Simple circuits using these devices.

**Basic Cooling System & Fire Safety:** Fundamental and scope of cooling system, Mode of heat transfer, Standards, Refrigeration cycle, Component of A/C, Refrigerants and types, Classification of fire, Portable fire extinguishers, Fire Suppression system, Analog and Digital fire alarm system, Electrical fire hazards.

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