

Syllabus

For the trade of

NETWORK TECHNICIAN

Under CTS

2002

Designed by

Government of India

Ministry of Labour (D.G.E.&T.)

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

**EN – Block, Sector – V, Salt Lake,
Kolkata-700091.**

List of members of the Trade Committee Meeting approved the syllabus for the trade of “Network Technician” under CTS held on 04.12.2002 at CSTARI

1.	Shri. H.Somasundram, Director	CSTARI, Kolkata	Chairman
2.	Shri A.K.Chandra, System Manager	RCC, Kolkata	Member
3.	Shri Rupak Chatterjee Sr. Hardware Faculty	George Telegraph	Member
4.	Shri Surajit Ukil, SO E/SB	ERTL (E), Kolkata,	Member
5.	Shri Sanjay Kant, DDT.	CSTARI., Kolkata	Member
6.	Shri S.Kumar, DDT.	CSTARI., Kolkata	Member
7.	Shri M.S.Ekambaram, ADT	CSTARI, Kolkata	Member
8.	Shri P.K. Kolay, T.O.	CSTARI, Kolkata	Member
9.	Shri A. K. Samaddar, JTA.	CSTARI, Kolkata	Member
10.	Shri G. Nandi, Jr. D'man	CSTARI., Kolkata	Member

GENERAL INFORMATION

1. Name of the course : Network Technician
2. N. C. O. Code No. :
3. Duration of Craftsmen Training : 06 Months
4. Entry Qualification : 12th Std. Passed under 10+2 System of education or its equivalent.
5. Unit strength : 16 Trainees
6. Space Requirement : 3.5 Sq. m per Trainee.

Syllabus for the trade of “Network Technician” Under Craftsmen Training Scheme

Duration: Six Months

Week No.	Practical	Theory
1	<p>Visit to different sections of the Institute. Safety precautions, Electrical Safety. Demonstration and operation of Fire Extinguishers. Demonstration of Artificial Respiration</p>	<p>Familiarisation with the Institute. Accidents, Safety precautions, Electrical safety. Types of fire extinguishers. Artificial Respiration.</p>
2	<p>Visit to establishments with general purpose and special purpose computers. Visit to Computer centers installed with Mini and Micro computers. Familiarisation with different type of Computers.</p>	<p>Basic definition of computer, features and applications, hardware, software, firmware and live ware. Data, Information, data types, physical & logical concepts of data. Representation of information inside a computer - Bit, byte, kilobyte, megabyte and gigabyte. Generation of Computers – Classification of computers according to purpose (general and special purpose), according to working (analog, digital and hybrid), according to processing capability (Super, mainframe, mini, micro, laptop and palmtop).</p>
3	<p>Identification of different peripheral devices. Connecting and dismantling cords, cables and peripheral devices. Identifying and handling of different types of Floppies and CDs. Understanding the keys and their functions in keyboard. Keyboard operation and practicing mouse.</p>	<p>Block diagram of a Computer system. Standard and common input/output devices. Processing unit – CPU, ALU, CU Memory unit – Primary and Secondary memory. Concept of Virtual memory. Semiconductor memories such as RAM, ROM, PROM, EPROM, EEPROM. Dynamic and Static RAM. L1 and L2 Cache Memories. Buses – Control bus, Address bus and Data bus. Secondary storage devices – magnetic tapes, floppy disk, hard disk, CDs and DVDs.</p>
4	<p>Booting the computer under DOS and Windows. Using different computer peripherals. Self-test for different Printers. Keyboard and mouse practice.</p>	<p>Computer peripherals – Different type of printers, scanners, mouse, cameras, bar code readers etc. Power On Self Test (POST). Booting – booting sequence, cold booting and warm booting. Booting files and their functions. Concept of LILO boot. Storage & retrieval of data – concept of tracks, sectors, blocks, cylinders, boot record, disk partitions, Master Boot Record (MBR and File Allocation</p>

		Tables (FAT). Types of software – system software & application software. Functions of operating system, interpreter, compiler and assembler.
5	Introduction to Windows – The user Interface, Using Mouse, Status Bar, Start, Menus, Running Applications, My Computer, Recycle Bin, Windows Explorer, Creating, Renaming, Copying & Moving files and folders. Using Help. Windows Settings – Control Panel, Setting Wall paper, Screen Savers, Date, Time, Sounds, Task bar and Start Menu. Using right mouse button.	MS Windows –Starting windows and their operations. File management through Windows explorer. Display properties, sound properties, different screen savers, and font management. Installation of programs. Setting, using and applications of control panel.
6	Advanced Windows – Creating shortcuts & folders. Using Accessories, Adding & Removing Components of Windows, Formatting a Floppy.	Applications of essential accessories such as notepad, WordPad, paintbrush, images, calculator, calendar, media players and sounds. Multimedia.
7	Practice of Basic DOS commands for File/Directory manipulations, Copying and Moving and File/Directory manipulations.	Basic DOS – Comparison of DOS & Windows, Switching between DOS & Windows. Basic DOS commands for File/Directory manipulations, Copying of Files & Disks, Delete/Undelete.
8	Motherboard – Study of different Buses, Processor sockets and RAM sockets on Motherboards. Identification of different types of RAM and their sockets. Programming and resetting CMOS and making front panel connections. Replacing BIOS and battery. Identification of different types of RAM and their sockets. Installing and extending RAM.	Computer hardware – Different type of Motherboards, on-board features, form factors. Different type of Buses – ISA, EISA, VESA, MCA and PCI. Different type of Processors, sockets, RAMs their features, capacities, frequency and advantages. Functions of I/O Ports and Motherboard BIOS.
9	Expansion Cards - Identification, checking and installing of AGP and different expansion cards commonly used. Installation and checking of Network Interface Card (NIC). Installing Floppy drives, Hard Disks and CD Drives. Partitioning and formatting of Hard Disks. Master/Slave configuration of Hard disks and CD Drives.	Function and features of different add on cards, Display cards, AGP and NIC. Different types of floppy drive, Hard Disks and CD Drives and their connections. DOS - different versions, advantages, features and applications. Windows - different versions, advantages, features and applications of windows.
10	Installation of Operating Systems – DOS, Windows95/98/ME and Unix/Linux.	Introduction to Computer Networks – Advantages of Networking, Peer-to-Peer and Client/Server Network. Network Topologies – Star, Ring, Bus, Tree, Mesh, Hybrid. Type of Networks – Local Area Networks (LAN), Metropolitan Area Networks (MAN),

		Wide Area Networks (WAN) and Internet.
11 to 12	Installing & Configuring a Peer-to-Peer Network using Windows Software. Making cables,	Communication Media & Connectors – Unshielded twisted-pair (UTP), shielded twisted-pair (STP) and coaxial cable: RJ-45, RJ-11, BNC. Crimping and making cables.
13	Installing & Configuring Windows 2000 Server.	Introduction to Data Communication – Analog and Digital Signals, Simplex, Half-Duplex and Full-Duplex transmission mode.
14	Installing & Configuring Novell Netware Server.	Network Components – Modems, Hubs, Bridges, Routers, Gateways, Repeaters, Transceivers, Switches etc. – their functions, advantages and applications.
15	Structured cabling and using I/O Box. Setting up Nodes.	OSI Model - The functions of different layers in OSI model.
16 to 17	Physically connecting and running the Network. Troubleshooting the Network.	Data transmission in the OSI Model. Protocols IPX/SPX. Troubleshooting the Network.
18 to 19	Configuring Print Server. Network Administration Functions. Identification and using the Network components. Cascading Hubs.	Ethernet operation. Ethernet characteristics. Ethernet cabling and components – Thick Net, Thin Net and 10 Base T. Limitations and Advantages of Ethernet.
20	Exposure and using Internet.	Internet – Architecture and History. The Internet Architecture Board. Various Applications of Internet.
21	Installing and Configuring Internet Connection on a PC using PSTN.	TCP Transmission Policy, and Congestion Control.
22	Installing and Configuring Internet Connection on a PC using ISDN.	TCP/IP Reference Model – Different layers and their functions. Comparison of the OSI and TCP Reference Models.
23 to 24	Installing and Configuring Internet Connection on a PC using ISDN. Installing Proxy Server. Setting E-mail accounts.	Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP), Hyper Text Transfer Protocol (HTTP), Simple Network Management Protocol (SNMP).
25	Assignment Presentation	
26	<u>Revision & Test</u>	

LIST OF TOOL & EQUIPMENT FOR NETWORK TECHNICIAN
(For a batch of 16 Trainees)

Sl. No.	Item Name, Description & Specification	Quantity
<u>HARDWARE</u>		
1	Intel Pentium IV Processor, 2 GHz, 512 MB RAM, 40 GB HDD, 3.5" FDD, 52 x CD Drive, Ethernet card 10/100 Mbps, 15" SVGA Colour Monitor with 32 MB Graphic Adopter, 3 button Mouse, 105 keys keyboard, or higher. <i>(8 PCs should be used for Hardware Training & Installation and rest to be used for Software Installation)</i>	17 Nos.
2	Network Terminator (NT1)	1 No.
3	Terminal Adapter (TA)	1 No.
4	Laser Printer (One should be Network Printer)	2 Nos.
5	Inkjet Printer	1 No.
6	Different Expansion Cards	1 each
7	16 port Hub	1 No.
8	UPS 1 KVA	2 Nos.
9	Air Conditioner 1.5 tonne.	2 Nos.
10	Modem (Internal & External)	2 Nos. each
11	ISDN line (For Internet)	1 No.
12	Telephone Line	1 No.
13	CD Writer	2 Nos.
14	Network Interface Card (Ethernet Card 10/100Mbps)	4 Nos.
15	Fire extinguisher	1 No.
16	Vacuum Cleaner	1 No.
<u>SOFTWARE</u>		
1	Netware Software with minimum 20 User license (Latest version)	1 No.
2	Microsoft Windows 2000 Server with minimum 20 User license or Latest	1 No.
3	Windows (95/98/Me) or Latest (17 User license)	1 No.
4	DOS 6.22 or Latest	1 No.
<u>MATERIAL</u>		
1.	Connectors – BNC, T-Connector, Terminator, RJ-45.	
2.	Cables – CAT-5, CAT-6, Thicknet, Thinnet, Co-axial Cable, Ferrules	
3.	Patch Panel and I/O Box	
4.	Floppy Disks, CDs	
5.	Isopropyl Alcohol, Floppy Disk Drive Cleaning Kits, CD Lens Cleaning Kits.	
<u>FURNITURE</u>		
1	Computer Tables with Chairs/stools	17 Nos.
2	Printer Tables	2 Nos.
3	Instructor Table	1 No.
4	Instructor's Chair	1 No.
5	Cabinet with drawer	2 Nos.
6	Students Lockers (steel) unit of 8 lockers	2 Nos.
7	Steel Almirah big size	1 No.
8	Steel Almirah small size	2 Nos.
9	Class room chairs with writing pad molded type	16 Nos.
10	4-Unit Rack for installation of Patch Panel, Hubs etc.	2 Nos.
<u>STUDENTS TOOL KIT</u>		
1.	Screwdriver Set of min. 5 bits (Combination of star & minus) + 1 ext. rod	1 No.
2.	Crimping Tool for BNC and RJ-45 connectors	1 No.
3.	Punching Tool	1 No.

Note : Some of Course Related CBTs may be purchased (Optional)