

BANGLADESH TECHNICAL EDUCATION BOARD



SYLLABUS FOR NATIONAL SKILL STANDARD BASIC (360 Hours)

ON

COMPUTER HARDWARE AND NETWORKING

Total Duration: 360 hours

Course Title: Certificate in Computer Hardware and Networking

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Course Name: Computer Hardware and Networking

Introduction:

Bangladesh is a country having an area of about 1,47,570 square kilometers. It is burdened with about 150 million people. So Bangladesh is a densely populated country. As such population problem is by far, a burning question of Bangladesh.

Over-population adversely affects the economic development and progress of a country. It creates problems of foods, communication, education, housing, health, sanitation, employment etc. But now-a-days over-population is not our curse; also it is a main resource of our country. If we can provide training of our unskilled people through technical (vocational) courses, we may convert them into skilled workers and solve the unemployment problem and earn foreign currency also.

Bangladesh Technical Education Board is authorized by parliament of our country to introduce, control and develop technical (vocational) curriculum.

At present professional computer training is essential for enriching our manpower from every corners of

Bangladesh. We need 5000 Hardware/Network professionals every year for fulfill the demands in our

IT sector in Bangladesh and skilled manpower for overseas.

In this regard BTEB has approved a short course on Computer Hardware and Networking. The syllabus is prepared as per present need in the job markets.

Objectives:

- 1 To be able to understand Computer Fundamentals
- 2 To be able to understand the concept of hardware, software and Firmware
- 3 To be able to assemble and reassemble Desktop & Laptop
- 4 To be able to install and configure Windows/Linux Operating System
- 5 To be able to configure, setup and troubleshoot computer hardware and other peripherals
- 6 To be able to troubleshoot printer, scanner, CC Camera/ Access Point Installation and other devices.
- 7 To be able to connect and configure mobile phone devices and TV card to computer
- 8 To be able to install UPS / IPS to supply regulated and uninterruptable power to computer
- 9 To be able to connect different types of cables with connectors and install NIC
- 10 To be able to establish a workgroup / Client server computer network system
- 11 To be able to configure DHCP / Mail / Web servers
- 12 To be able to configure DNS server and client
- 13 To be able to connect a Personal Computer to internet
- 14 To be able to send and receive e-mail
- 15 To be able to connect a LAN to internet Via Dial up and Broadband Line
- 16 To be able to understand visualization concept
- 17 To be able to understand virtual networking
- 18 To be able to establish wireless network
- 19 To be able to understand Remote Server Administration
- 20 To be able to understand Occupational health & Safety in IT Sector

Course Outline:

Name of Course	Duration of Course		Entry Qualification
Computer Hardware and Networking	Total 360 hrs	6 days per week, Per day 3 hrs	Minimum Eight Pass.
	Theory= 100 hrs (Computer Hardware: 60, Computer network: 40)	Theory = 1 hr, per lesson Practice = 2 hrs. per practice	
	Practical= 200 hrs. (Computer Hardware: 120, Computer network: 80)	Total = 3 hrs, per working day	
	Communicative English= 60 hrs		

LIST OF COMPETENCIES:

Basic Competencies

- a) Receive and respond, Participate and Lead to workplace communication:
1. Work with others, Team Environment and Lead small Teams:
 2. Demonstrate work values, Practice career professionalism and Develop & Practice Negotiation skills.
 3. Practice housekeeping procedures. Occupational health and safety procedure and Solve problems related to work Activities.
 4. Use Mathematical Concepts & Techniques and Use Relevant Technologies.

b) Personal Manner

Efficiently communicate in English

1. Speak in English with confidence.
2. Communicate with target persons effectively.
3. Understand the speech of English users.
4. Achieve better professional performance

Common Competencies

1. Understanding computer Fundamentals and concept of numbering system
2. Concept of Hardware, software and Firmware.
3. Concept on Memory
4. Assemble disassemble of computer Hardware.
5. Identification of different Units of a Micro-Computer..
6. Identification of different parts / peripherals devices of a Micro-Computer
7. Identification of RAM (SIMM, SD, RD, DIMM, DDR,) , ROM and their Capacities
8. Installation of Windows / Linux Operating System
- 10 Installation of Anti Virus and Drivers Software's
11. Creation of emergency Boot Disk
12. Perform exercise on external / internal DOS commands
13. Identification of HDD, CD / DVD Drive, Pen Drive , Graphics Card, Power Unit, NIC device, Processor, Modem, Sound card etc.
- 14 . Identification of different components of motherboard (processor socket, battery, RAM slots, IDE, SATA connector, ISA, PCI, AGP slots , Chip set, ROM BIOS .and connector
15. Identification of different elements of Computer network
16. Identification of different types of cable media(UTP / STP / Co-ax, Optical fiber)
17. Identification of different types of media Connectors
- 18 Connection of UTP cable to optical fiber, thinnet coaxial cable to NIC, fiber optic cable to NIC, UTP cable to RJ45 connectors according to EIA / TIA rule
19. Installation of Ethernet NIC driver
20. Install Windows Server (latest version)
21. Install Linux operating system / RHEL / CentOS & Ubuntu
22. Creation of an e-mail account by using e-mail software
23. Browsing of different Web information

Core Competencies

1. Assemble and Disassemble of the system unit of a personal computer
2. Upgradatoin of System Board / system BIOS
3. Configuration of Operating System and Video Output device, USB devices, Serial . Device, AGP Card, Sound/Game device, MODEM and LAN Card.
4. Troubleshooting of Motherboard and power supply, Video Output device, RAM, AGP, NIC HDD, CRT / LCD / LED Monitor
5. Installation of External / Internal TV card / mobile device / External Storage device to a computer
6. Installation of UPS / IPS to supply regulated and un-interruptible power to computer

7. configuration of Workgroup Ethernet LAN with minimum five computers and share files , folders, drives and printer
8. configuration of Server based Network with minimum five computers and share files , folders ,drives and printer
9. Expanding an Ethernet LAN by using Hubs / Switch
10. Configuring Automatic and Manual TCP / IP Settings
11. Configuration of Dial up and Broadband Internet connection / Wireless configuration
12. Sending and receiving e-mail with file attachment by using e-mail software
13. Remote Desktop Services (VNC, Team Viewer, Any Desk etc.)
14. Managing Sub-netting and TCP / IP routing
15. Implementing secure network procedures
16. Mikrotik Router configuration (WAN, LAN), DNS, DHCP & Bandwidth Management.

Contents:

a) (i) Basic Competencies - 30 hours

Period	Topics	hours
1. Receive and Respond, Participate and Lead to workplace communication:		
1	a) Explain & follow routinely speaking & messages in a workplace.	1
2	b) Follow routinely Speaking & message.	1
3	c) Perform work duties following written notices.	1
2. Work with others, Team Environment and Lead small Teams:		
4	a) Develop effective workplace relationship.	1.5
5	b) Contribute to work group activities.	1.5
3. Demonstrate work values, Practice career professionalism and Develop & Practice Negotiation skills		
6	a) Define the purpose of works.	1
7	b) Apply work values/ethics.	1
8	c) Deal with ethical problems.	1
9	d) Maintain integrity of conduct in the workplace.	1
4. Practice housekeeping procedures, Occupational health and safety procedure and Solve problems related to work Activities:		
10	a) Sort and remove unnecessary items.	1
11	b) Arrange items.	1
12	c) Maintain work areas, Tools and Equipment's.	1
13	d) Follow standardizes work process and procedures.	1
14	e) Perform work spontaneously.	1
15	a. Use Mathematical Concepts & Techniques and Use Relevant Technologies:	3
6. Personal Manner:		
16	a) Show good Manner.	2
17	b) Respect honorable person (Sir, Senior, Trainees).	2
18	c) Cooperate & Thinking to each and other about practical works.	2
19	d) Maintain sequence in practical works.	2
20	e) Own Responsibility & Duties of practical works.	2
21	f) Observation of all practical works.	2

a) (ii) Communicative English - 30 hours (Practical)

- a) Interpret the meaning of given words (by the teachers) - Vocabulary.
- b) Speaking on a specific Situation.
- c) Public speaking.
- d) Exchanging views with target persons.
- e) Introducing one self.
- f) Describing & narrating events, places, objects etc.

Communicative English - 30 hours

Related Subject-10 hours and General Subject- 20 hours 1 hour/period

On the completion of this course trainees will be able to:

1. Speak in English with confidence
2. Communicate with target persons effectively.
3. Understand the speech of English users.
4. Achieve better professional performance.

No. of period	Tropics- Conversational Situation	hours
01	Speaking English – Getting Information & Finding one's way	1
02	Speaking English – About Tools and Equipment's	1
03	Speaking English – About meeting someone & participating in class.	1
04	Speaking English – Daily Activities & Asking About Activities	1
05	Speaking English – Evening Activities and about theoretical contents.	1
06	Speaking English – Meeting at the Train station & Asking Question at the Train station.	1
07	Speaking English – Meeting at the Airport & Getting information at the Airport's	1
08	Speaking English – About different type of Measuring Tools and Cutting Tools	1
09	Speaking English – Getting to the Hotel & Asking direction.	1
10	Speaking English – Asking about Buses & Traveling by bus.	1
11	Speaking English - About Practical Class.	1
12	Speaking English – Going by Taxi and Asking the time.	1
13	Speaking English – Arriving early or late and Time and the calendar.	1
14	Speaking English – Living in an Apartment.	1
15	Speaking English – Using the Telephone.	1
16	Speaking English – Getting help in stores and talking about shopping.	1
17	Speaking English – Sending and Receiving Letters.	1
18	Speaking English – Talking about the Weather & Trips and sightseeing.	1
19	Speaking English – Talking about Eating & Dinner Conversation.	1
20	Speaking English – About Machines and Materials.	1
21	Speaking English – Common Health problem and Quitting & Finding Jobs.	1
22	Speaking English – Office Details and Office Conversation.	1
23	Speaking English – About Practical Job.	1
24	Speaking English – On a specific situation & Public speaking.	1
25	Speaking English – About Exchanging view with a Persons & Introducing oneself.	1
26	Speaking English – Describing and Narrating events, place, Objects etc.	1
27	Speaking English – About different type of computer, operating system, system and operating software, add remove software, DBM, Email and internet.	4

Practical:

1. Speaking on a specific Situation.
2. Public Speaking.
3. Exchanging views with target persons.
4. Introducing one self.
5. Describing & Narrating events, places, objects etc.
6. Producing the meaning of given words (by the teachers)-Vocabulary.
7. Prepared speech.

1. Computer Hardware: Theoretical: Common & Core Competencies

Theoretical (Computer Fundamentals)		
Sl. No.	Topics	Hour
01	Classify computers Generations depending on capability, size, speed etc.	1
02	Introduction of a Micro-Computer	1
03	List the different parts / peripherals devices of a Micro-Computer.	1
04	Describe Concept of Numbering system / Boolean Algebra/ Logic Gates	1
Practical (Computer Fundamentals)		
02	Identify the different Units of a Micro-Computer.	2
03	Identify the different parts / peripheral devices of a Micro-Computer.	2
Theoretical (Concept of Hardware, software and Firmware)		
05	Define Hardware, software and firmware / Simulator/ Emulator	1
06	Define and Classify input, output, storage device	2
07	Define and classify system software, application software	1
08	Sate the function of System and Application software	1
09	Understand BIOS / MBR / GPT / EFI / UEFI	1
Practical (Concept of Hardware, software and Firmware)		
07-08	Identify input, output , storage devices and Special Devices	2
09	Configure and Update BIOS / MBR / GPT / UEFI / EFI	2
Theoretical (Concept of Memory)		
10	List the types of memory, distinguish primary and secondary memories.	1
11	Distinguish between RAM (SIMM, SD, RD, DIMM, DDR) and ROM	1
12	Classify the secondary storage devices / SSD vs HDD	1
13	Define Memory Capacity, Bit, Byte, Kilobyte, Megabyte, Gigabyte, and Terabyte	1
14	Describe Virtual, flash Memory and different types of memory card	1
Practical (Concept of Memory)		
11-12	Identify RAM (SIMM, SD, RD, DDR) , ROM and their Capacities (Bus Speed)	2
Theoretical (Operating System)		
15	Describe Operating System; identify different types of Computer Operating System.	1
16	Describe about file systems (FAT, FAT32,NTFS)/ ex Fat, file compression, disk fragmentation, Data reduplication	2
17	Understand Windows Tools: graphical tools, taskbar, windows explorer, / UAC, control panel, device manager, disk management tools, command line tools	2
18	Understand of files, folders, sharing , permission etc./ GPO	1
19	Understand Local security, built in user group and accounts, user account properties, workgroup, domain Local User vs Domain User	2
20	Importance of emergency Boot Disk , Describe MBR & GPT ,Partition System	1
Practical (Operating System)		
15	Identify different types of Computer Operating System and their environment. , Install Windows / Linux Operating System MBR vs GPT	6
16	Convert file system (FAT, FAT32,NTFS) Basic Disk vs Dynamic Disk, Partition System (Drive Management)	2
17	Perform File Compression, Disk Fragmentation, Disk cleanup, System recovery, System information and System restore.	4
18	Identify and explore Windows Tools: graphical tool, taskbar, windows explorer, control panel, device manager, disk management tool, command line tool, Install Application Software (Bijoy, Cleaner, Winrar, PDF etc)	2

19	Install Anti Virus and Driver Software , Perform exercise on external / internal DOS commands	6
20	Manage Local security, built in user group and accounts, user account properties, workgroup, domain etc. ... , Create an emergency Boot Disk / Windows Backup & Restore using Acronis	6
Sl. No.	Topics	Hour
Theoretical (Assemble, De-assemble of computer hardware)		
21	Understand HDD, RAM (DIMM), CD/DVD ROM Drive, Graphic Card, Power Unit, NIC , Processor, MODEM, Sound card etc.	2
22	Understand different components of motherboard (processor socket, RAM slots, IDE, SATA connectors, ISA, PCI, AGP slots / North & South Bridge	2
23	Understand different components of motherboard (Chip sets, ROM BIOS etc.)	1
24	Understand serial device, Parallel Device, PS2 device, Video output Device, Wireless device	2
25	Understand different types of connector (serial, PS2, USB, IDE, parallel etc.)	2
26	Procedure of Upgrade/ setup System Board	1
27	Mention Assembling procedure of the system unit of a personal computer	1
28	Mention Upgrade procedure of the system BIOS	1
29	Procedure of upgrade of CPU	1
30	Installation procedure of Video Output device, USB device, Serial Devices, AGP Card, Sound/Game device, Modem and LAN Card device and any other device wireless LAN card	3
31	Introduction to various types of Application software and installation	1
32	Introduction to Visualization Software	1
33	Installation procedure necessary customized software	1
34	State preventive and corrective Maintenance	1
35	State the safety role in a computer lab	1
Practical (Assemble, De-assemble of computer hardware)		
21	Identify HDD, CD / DVD Drive, Pen Drive , Graphic Card, Power Unit, NIC , Processor, MODEM, Sound card etc.	4
22	Install HDD, RAM, CD/DVD Drive, Graphic Card, Power Unit etc. on Motherboard	4
23	Install Processor, MODEM , NIC, Sound card etc. on Motherboard	4
24	Identify different components of motherboard (processor socket, battery, RAM slots, IDE, SATA, PATA, ATA connectors, ISA, PCI, AGP slots)	4
25	Identify different components of motherboards (Chip sets, ROM BIOS etc.)	2
26	Identify different type's connectors (serial, PS2, USB, IDE, parallel, ISCSI, SCSI etc.)	4
27	CMOS Battery Testing	2
28	RAM/Faculty RAM Identify and Testing	2
29	How to clean Desktop/Laptop using Blower	2
30	Identify serial device, Parallel Device, PS2 device, Video output Device, Wireless device	4
31	Upgrade/ setup System Board , Work with preventive and corrective Maintenance	4
32	Assemble the system unit of a personal computer with P4 , AMD, Celeron Processors	4
33	Upgrade the system BIOS , Diagnose and Trouble shoot the operating system	2
35	Configure and Upgrade Operating System , Diagnose and Trouble shoot the operating system, Work with preventive and corrective Maintenance	4

35	Install and upgrade Video Output device, USB devices, Serial Devices, AGP Card, Configure and upgrade Sound/Game devices, MODEM and LAN Card device and any other devices, Install necessary customized software	8
Sl. No.	Topics	Hour
Theoretical (Troubleshoot Device Problem)		
36	Procedure of troubleshooting Motherboard and power supply , Procedure of troubleshooting input Device problem	2
37	Procedure of troubleshooting Video Output devices, RAM, AGP, NIC	2
38	Procedure of troubleshooting HDD and other storage devices , List mobile device/External Storage device to connect to Computer through Bluetooth/ cable/ infrared	2
39	Describe Network Connection Problem (Common problems, troubleshooting utilities)	1
Practical (Troubleshoot Device Problem)		
36	Troubleshoot Motherboard and power supply	2
37	Troubleshoot Video Output device, RAM, AGP, NIC etc.	4
38	Troubleshoot HDD and other storage devices	2
39	Troubleshoot input Device problem	2
Theoretical (Install and troubleshooting printer and Scanner)		
40	Mention the classification of printer /plotter and Scanner	1
41	Define local printer, remote printer, network printer	1
Practical (Install and troubleshooting printer/ Monitor/ Scanner/TV card)		
40	Access remote printer, Configure network printer, share printer , Troubleshoot CRT / LCD Monitor , Install External / Internal TV card to a computer	2
41	Install mobile device/External Storage devices to connect to Computer through Bluetooth/ cable/ infrared	2
Theoretical (Install and troubleshooting UPS and IPS)		
42	State difference between UPS and IPS, Online UPS and Power Optimization , State different types of UPS /IPS and their rating, Mention the use of UPS and IPS	1
Practical (Install and troubleshooting UPS and IPS)		
42	Install UPS / IPS to supply regulated and un-interruptible power to computer	4
Total Theoretical		60
Total Practical		120

2. Computer Network: Theoretical: Common & Core Competencies

Sl. No.	Topics	Hour
Theoretical (Network Fundamentals/Basic Networking)		
1	Define Computer network and it's advantages and uses, mention the elements of Computer network	1
2	Mention the types of cabling & Connector , Discuss Communication Media (Wired & Wireless) used for Computer network, Understand the grading system used for the various cable types	1
3	Draw the cross section of co axial cable, STP, UTP cable, Fiber optic cable.	1
4	Mention the types of media Connector	1
5	Mention the types of Wireless media used for Computer network	1
6	Mention the EIA / TIA rule for straight through and cross connection of UTP cable to RJ45 connector, DB-9	1
7	Describe the Basic Networking topologies (Bus, Ring and Star, Mesh, Partial Meshetc.) used to build network. Basic Comparison between Different Networking Topologies Distinguish different type of network devices (Hub, Switch, Router, Repeater)	1

8	Distinguish different types of networking(LAN, MAN, WAN,CAN, PAN) , OSI Layer and TCP/IP Model , Understand Full Duplex and Half duplex communication	1
Practical (Network Fundamentals/Basic Networking)		
1	Identify the elements of Computer network	2
2	Identify the types of cable media(UTP / STP / Co-ax, Optical fiber) and their grading systems used for Computer network	2
3	Identify the media Connectors	2
4	Connect UTP cable to optical fiber through a media converter	2
5	Make a thinnet coaxial cable connection to NIC through BNC connector	2
6	Make a fiber optic cable connection to NIC through fiber optic cable connector	2
7	Make straight through connection of UTP cable to RJ45 connector according to EIA / TIA rule	2
8	Make cross connection of UTP cable to RJ45 connector according to EIA / TIA rule	2
Theoretical (IP Addressing)		
9	Describe MAC and IP Addressing , mention the classification of IP address ,Classification of IPv4 , Introduction of Ipv6	1
10	Understand function of subnet mask, describe how to create subnets on a network	1
11	Describe Sub netting of different classes , mention the advantages of sub netting	1
12	Describe Port & Protocols	1
13	IPV4 Classification and Introduction of IPV6	1
14	Cabling (Straight & Cross, Rollover)	1
15	Introduction to console, Aux, Port	1
Theoretical (Wireless)		
16	Introduction to wireless communication Wireless vs Wired communication Wireless network standard	1

Sl. No.	Topics	Hour
Practical (IP Addressing and Network Standard)		
9	Install Ethernet NIC driver, Assign the name of computer and IP Address , Check IP and MAC addresses of each computer	2
10	Connect two computers through a cross connected cable and share files , folders and drives	2
11	Connect five computers by Hub through straight connected cable and check connectivity.	2
12	Create and configure a Workgroup Ethernet LAN with minimum five computers and share files , folders and drives	2
13	Install and configure network printer to share printing documents from networked computers	2
14	State the meaning of 10Base-T , 10base 2 , 10Base 5 , 10Base FL , 100VG Any LAN , 100Base X etc., Ethernet Standard Mention types of cables used in Token ring LAN	2
15	Mention the IEEE standards for LAN , Understand Ethernet, Token ring and FDDI Network Mention the limitations of Token ring LAN Mention the advantages and disadvantages of FDDI Network Describe data communication process of Ethernet, Token ring Network Mention the specification of Ethernet LAN , Create and configure Subnets on a Network	2

Theoretical (Network Connectivity and Expansion)		
17	State the role of NIC for data communication , mention the types of NIC	1
18	State the function of Repeater, mention it's limitations	1
19	Describe different types of Hub and Switch	1
20	Understand the functions of a Hub/Switch, Process of adding Additional Hub / Switch to the network	1
21	Distinguish the requirements of hub and switch for a particular network	1
Practical (Network Connectivity and Expansion)		
16-18	Using 5-4-3 rule Expand an Ethernet LAN by using multiple Repeater	2
19-20	Using 5-4-3 rule Expand an Ethernet LAN by using multiple Hub / Switch	2

Theoretical (Network Software and Protocol)		
22	Printer/File sharing from one PC to another	
23	Describe Network Operating System, list Network operating System for server	1
24	Describe basic networking capabilities of Windows / Linux	1
25	Understand network protocol, describe how protocol enable networked computer to communicate	1
26	Describes Port & protocol	1
27	Mention the application of FTP , TCP vs UDP, ARP, RARP, ICMP etc. protocol TCP vs UDP, IMAP vs POP3	1
28	Understand the function of the primary TCP/IP utilities	1

Sl. No.	Topics	Hour
Practical (Network Software and Protocol)		
21	Install Windows /Linux operating system (Client OS & Servers)	2+2
22	Configure Automatic and Manual TCP / IP Settings on Windows/Linux	2
23	Configure TCP / IP addressing on a server computer	2
24	Configure TCP / IP Client in a computer	2
25	Implement secure network procedures: Implement security baseline settings by using security templates / the principle of least privilege	2
26	Install and configure software update infrastructure / software update services / automatic client update settings	2
27	Install Windows /Linux operating system (Client OS & Servers)	2+2
Theoretical (Network Server and Client)		
29	Describe client capabilities of major operating system, describe services , Introduction to MikroTik Router	1
30	Understand the function of DNS , DHCP , Web , Mail , Remote Access and Proxy Server	1
31	Explain how DHCP assigns TCP/IP configuration setting to Work-stations	1
32	Understand the function of DNS and the windows Internet Name Services	1
33	Mention the significance of directory services provided with the windows operating system	1

34	Distinguish a server based network and Workgroup network ,	1
Practical (Network Server and Client)		
28	Install Mikrotik Router	2
29	Configure LAN & WAN connection	2
30	Configure DNS & DHCP Pool, provide IP to client	2
31	Manage BW for client	2
32	Configure FTP Server	2
33	Ping, TraceRT, IPconfig, nslookup and other basic command, Configure port for Proxy server on Client Machine	4

Theoretical (Internetwork Connectivity and internet services)		
35	Describe the process of data communication by MODEM by using existing telephone line	1
36	Define internet, intranet , email and web services , Mention different Internet Services and their application	1
37	Understand the function of a router, list the various types of router	1
38	State the significance of Remote Access service(RAS) Mention the limitations of RAS	1

Sl. No.	Topics	Hour
Practical (Internetwork Connectivity and internet services)		
34	Connect a personal computer to internet via MODEM and Telephone line and configure a dial – up connection	2
35	Make a connection of a LAN to internet via optical fiber, media converter and UTP / Coaxial cable and configure a broadband connection, Configure port for proxy server on client machine, Create an e-mail account by using any e-mail / Browser software	2
36	Send and receive e-mail with file attachment by using any e-mail / Browser software	2
37	Practice on any web Browser and identify different command icons	2
38	Browse different Web information by applying web address / Search different Websites by using search engine	2
39	Configure and Manage Remote Access Server(RAS) / Remote Access Logging, Configure Routing and Remote access user authentication, Manage TCP / IP routing	4
40	Wireless router administration with SSID creation, end user connect to Wireless router, Internet Browsing etc.	2
Total (Theoretical)		40
Total (Practical)		80

Job List:

Computer Hardware	
Sl. No.	Name of Jobs
1	Identify the different Units of a Micro-Computer.
2	Identify the different parts / peripheral devices of a Micro-Computer.
3	Identify input, output , storage device and Special Device
4	Identify different types of Software versions and their environments
5	Identify RAM (SIMM, SD, RD, DDR) , ROM and their Capacities
6	Identify different types of Computer Operating Systems and their environments.
7	Install Windows / Linux Operating System
8	Convert file system (FAT, FAT32,NTFS)
9	Perform File Compression, Disk Fragmentation, Disk cleanup, System recovery, System information and System restore.
10	Identify and explore Windows Tools: graphical tool, taskbar, windows explorer, control panel, device manager, disk management tools, command line tool
11	Install Anti Virus and Driver Software

17	Perform exercise on external / internal DOS commands.
12	Managing Local security, built in user group and account, user account properties, workgroup, domain etc.
13	Create an emergency Boot Disk
14	Identify HDD, CD / DVD Drive, Pen Drive , Graphic Card, Power Unit, NIC , Processor, MODEM, Sound card etc.
15	Install HDD, RAM, CD/DVD Drive, Graphic Card, Power Unit etc. on Motherboard
16	Install Processor, Modem, NIC , Sound card etc. on Motherboard
17	Identify different components of motherboard (processor socket, battery, RAM slots, IDE, SATA connectors, ISA, PCI, AGP slots)
18	Identify different components of motherboard (Chip sets, ROM BIOS etc.)
19	Identify different types of connector (serial, PS2, USB, IDE, parallel, SCSI etc.)
20	Identify serial device, Parallel Device, PS2 device, Video output Device, Wireless device
21	Upgrade/ setup System Board
22	Assemble the system unit of a personal computer with P4 , AMD, Celeron Processor
23	Upgrade the system BIOS
24	Configure and Upgrade Operating System
25	Install and upgrade Video Output device, USB device, Serial Device, AGP Card
26	Configure and upgrade Sound / Game device, Modem and LAN Card etc.
27	Install necessary customized software
28	Diagnose and Trouble shoot the operating system
29	State preventive and corrective Maintenance
30	Troubleshoot Motherboard and power supply
31	Troubleshoot Video Output device, RAM, AGP, NIC etc.
32	Troubleshoot HDD and other storage devices
33	Troubleshoot input Device problem
34	Add a printer, Install the printer device driver / Scanner / Other devices
35	Access remote printer, Configure network printer, share printer
36	Troubleshoot CRT / LCD Monitors
37	Install External / Internal TV card to a computer
38	Install mobile device / External Storage device to Computer through Bluetooth/ cable/ infrared
39	Install UPS / IPS to supply regulated and un-interruptible power to computer
Computer Network	
Sl. No.	Name of Jobs
1	Identify the elements of Computer network
2	Identify the types of cable media(UTP / STP / Co-ax, Optical fiber) and their grading systems used for Computer network,
3	Identify the types of media Connector
4	Connect UTP cable to optical fiber through a media converter
5	Make a thinnet coaxial cable connection to NIC through BNC connector
6	Make a fiber optic cable connection to NIC through fiber optic cable connector
7	Make straight through connection of UTP cable to RJ45 connector according to EIA / TIA rule
8	Make cross connection of UTP cable to RJ45 connector according to EIA / TIA rules
9	Install Ethernet NIC driver, Assign the name of computer and IP Address , Check IP and MAC addresses of each computer
10	Connect two computer through a cross connected cable and share files , folders and drives
11	Connect five computers by Hub through straight connected cables, and check connectivity.
12	Create and configure a Workgroup Ethernet LAN with minimum five computers and share files , folders and drives

13	Install and configure network printer
14	Create and configure Subnets on a Network
15	Using 5-4-3 rule Expand an Ethernet LAN by using Multiple Repeaters
16	Using 5-4-3 rule Expand an Ethernet LAN by using Multiple Hubs / Switch
17	Install Windows 7, 10, Windows Server 2008, 2012 operating system
18	Install Windows Linux operating system
19	Configure Automatic and Manual TCP / IP Settings
20	Configure TCP / IP addressing on a server computer
21	Configure TCP / IP Clients in a computer
22	Implement secure network procedures: Implement security baseline settings by using security templates / the principle of least privilege
23	Install and configure software update infrastructure / software update services / automatic client update settings
24	Configure MikroTik Router ,Manage user accounts , Group Accounts
25	Install and Configure DNS server : Configure DNS server options / DNS zone options / DNS forwarding / DNS clients and secondary DNS
26	Manage DNS : Manage DNS zone settings / DNS record settings / DNS server options
27	Configure and manage DHCP server: Manage DHCP client /
28	Manage DHCP scope options , reservations and reserved clients
29	Configure a mail server and send / receive e-mail through it
30	Configure a web server and host web page to it and browse web pages from it
31	Connect a personal computer to internet via MODEM and Telephone line and configure a dial – up connection
32	Make a connection of a LAN to internet via optical fiber, media converter and UTP / Coaxial cable and configure a broadband connection
33	Install and configure a Proxy server for connecting LAN to Internet
34	Create an e-mail account by using any e-mail / Browser software
35	Send and receive e-mail with file attachment by using any e-mail/ Browser software
36	Practice on any web Browser and identify different command icons
37	Browse different Web information by applying web address / Search different Websites by using search engine
38	Configure and Manage Remote Access Server(RAS) / Remote Access Logging
39	Configure Routing and Remote access user authentication
40	Manage TCP / IP routing

Entry Qualification:

Minimum Class Eight Pass (Should have computer Knowledge).

Employment opportunities:

1. Government Services,
2. Semi Government Services,
3. Corporation,
4. Private sectors,
5. NGO's
6. Abroad,
7. Self-employment.

Training Facilities on each group of 30 students:

Physical facilities	Size(in ft)	Area (in Sq. ft)
Class Room cum Laboratory	15X 20	300
Office Room cum Library	15X20	300
Wash room	4X7	28

List of Tools (For number of trainees 30):

Tools	Quantity
Personal Computer System and Accessories	10
Hard disk drive	5
Sound card	5
Mother board	5
CD drive	5
Pen drive	5
Memory card	5
DVD drive	5
Network Tool box	5 box
RAM	5
ROM	5
Power Supply Unit	5
Data Cable	5 sets
Monitor (CRT / LCD)	5
Printer	5
Scanner	Max 5
MS Office / Windows XP CD/ISO	05 set
Setup disk	5 set
AGP card	5
Microphone / Speaker	5 set
TV card	5
Multimedia Projector	2 pcs
UPS / IPS	5
Mobile set	5
Computer Network	
Server PC	2
Printer	5
MODEM	2
LAN Card	10
RJ 45 / RJ11 / BNC / T / IBM Connector	1000
Coaxial cable	100 meter
Optical fiber cable	100 meter
Twisted pair cable	100 meter
Hub / Switch (16 port)	5
Repeater	4
DVDRead/Writer	5
Windows 7, 10, Windows server 2008, 2012 / Linux CD	06 set
Router	05
Internet Connection	*** (Broadband/Dial up)
First Aid Kit	01 box

Book Reference:

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|---|--|
| 1. A+ Certification- Core Hardware | Second Edition, CompTIA A+ Certification |
| 2. A+ Operating System | Second Edition, CompTIA A+ Certification |
| 3. CCNA: Cisco Certified Network Associates Study Guide | Forth Edition, Todd Lammle |
| 5 . Windows Server 2012 | MCSA / MCSE Study guide |
| 6 . Network Essentials | MCSE Study guide |
| 7 . Data Communication & Networking | Behrouz A. Forouzan
Forth Edition |