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| **Syllabus for Diploma in “IT, Networking and Cloud”** | | | |
| **Core Module 1: Computer Hardware & Networking (320 Hrs)** | | | |
| **Learning  outcome** | **Professional Skills (Trade Practical)** | **Professional Knowledge (Trade Theory)** | |
| **Able to use basic  PC hand tools  , cable and connnectors** | **Skills on using Basic PC  Hand Tools, cables and connectors (6 hrs)** 1. Remove screws using  screw driver (0.5 Hrs) 2. Cut and Skin cables using  cutting plier (0.5 Hr) 3. Desolder electronic  components using  desoldering pump, Remove  electronic components  using tweezers **(0.5 Hr)** 4. Solder electronic  components **(0.5 Hr)** 5. Crimp CAT 6 cables using  crimping tool **(0.5 Hr)**  7. Connect SATA/IDE Cables  to Hard Disk Drive (0.5 Hr) 8. Crimp CAT 6 cable to RJ 45  connector (1 Hr) 9. Connect peripherals  (Keyboard, Mouse, USB  drive, printer) to USB port,  Connect SVGA/HDMI  Cable to the system (1 Hr) 10. Connect multimedia  devices to AV Port (0.5 Hr) | | **Hand Tools (3 Hrs)**   * Specifications of Tweezers,  Screw Driver, Cutting Pliers,  Crimping Tool, Soldering  Iron, De-soldering Pump ,Safety hazards on basic  hand tools, Importance of Cables * SATA/IDE Cables, CAT 6  cables, SVGA/HDMI cables, Importance of RF connectors, USB ports, AV Ports |
| **Able to  Disassemble and  assemble PC** | **Disassembling PC (3 Hrs)** x Remove power cords and  peripheral cables **(0.5 Hr)** x Remove the cabinet and  identify the components,  slots, sockets, and  connectors of  motherboards. **(0.5 Hr)** x Remove the SMPS **(0.5 Hr)** x Remove Hard disk Drive,  RAM, CMOS Battery,  coolant fan and DVD/BD  Drive **(1 Hr)** x Remove add on cords Remove and clean the  motherboard **(0.5 Hr)**  **Assembling PC (3 Hrs)** x Mount the mother board on  cabinet **(0.5 Hr)** x Connect Hard disk Drive,  RAM, coolant fan, DVD/BD  Drive and fix CMOS Battery  **(0.5 Hr)** x Connect the SMPS and  add on cords **(0.5 Hr)** x Assemble the cabinet. And  connect the peripherals **(1  Hr)** x Connect power cords and  switch on power supply  and run the PC **(0.5 Hr)** | **Disassembling and  Assembling PC (3 Hrs)** x Introduction to computers,  applications. Basic blocks of  a digital computer.  x Different types and  specifications of the cables  and connectors used for  interconnecting the devices, boards, cards, components  inside a PC x Importance of SMPS, Hard  disk, Internal and external  memory devices  x Different types of I/O Devices  (Monitors, Printers, Mouse,  Keyboards, Scanners,  Plotters, Speakers) Precautions to be taken while  opening and closing PC  cabinet. | |
| **Able to install and maintain  software’s for a  PC** | **Software Installation (6 Hrs) 1.**  Prepare Hard disk for OS  installation by making  partitions **(2 Hrs)** 2. Install Operating System  Windows and Linux in two  different partitions **(2 Hrs)** 3. Install Device Drivers , x Install/Uninstall Application  software (Office, Multimedia  and Antivirus) **(2 Hr)** | **Software Installation (3 Hrs)** Distinguish between  System Software and  Application Software x Differentiate between Linux  and Windows OS x Windows 32 bit, and 64 bit  System x FDISK, Format, Scandisk,  FAT System, NTFS and  Directories, Fragmentation  and defragmentation disk | |
| **Able to manage  files effectively in  Windows and  Linux  environment** | **File Management (5 Hrs)** 1. Create, save, rename,  move, copy and delete files  and folders.**(1 Hrs)** 2. Transfer files and folders  from/to external storage  devices **(0.5 Hrs)** 3. Create zip file **(0.5 Hr)** 4. Extract the zip file **(0.5 Hr)** 5. Create automatic backup **(0.5  Hrs)** 6. Hide/unhide files/folders **(0.5 Hr)** 7. Create password for  individual files **(0.5 Hrs)** 8. sort file, folders, change view of file and folders and various operation related to files and folders **(1)** | **File Management (2 Hrs)** x Functions of Key board and  Mouse x Applications MS Paint/Note  pad x Different text formats x Different image file formats x Advantages of compressing  files x Distinguish between backup  and cloning | |
| **Able to work  with Linux  environment by  using Linux  commands.** | **Linux (17 hrs)** Read terminal ID using TTY  command to know which  terminal we are working **(1  Hrs)** Execute the following Linux Commands x TTY Command, uname  Command, Date, cal,  Whoami, Man, Pwd,  Whatis, Fdisk, Sudo,  Ifconfig, Chmod, Umask,  Adduser, Ping, Hostname,  Dpkg –i **(8 Hrs)** x Touch, echo, clear, ls, Dir,  Mkdir, Cat, Rmdir, Rm, Cp,  Mv, Find, Head, Tail, Tar,  Gzip, Bzip2, Alias, Sed,  wc, sort. **(8 Hrs)** | **Linux (8 hrs)** x Introduction to Linux  operating system x Familiarization with GUI  environment x Syntax of shell commands  X Shell scripting | |
| **Able to create  document,  spread sheets  and make  presentations  using open office** | **Open Office (25 Hrs)** x Draw sketches using paint **(2 Hrs)** x Create your resume using  edit commands in document  **(2 Hrs)** x Create purchase order  using tables and images **(3  Hrs)** x Create magazine using  columns page borders,  header footers **(2 Hrs)** x Create an invitation letter  using mail merge for n  invitees **(2 Hrs)** x Create mark sheet using  spread sheet with data  validation **(2 Hrs)** x Create chart for mark sheet **(2 Hrs)** x Create Pay slip using  functions and formulae **(3  Hrs)** x Create Pivot table/chart for  inventory management **(4  Hrs)** x Create Presentation by  inserting charts, tables and  images about organization **(3 Hrs)** | **Open Office (5 Hrs)** Familiarisation of open office  tools for creating documents,  spread sheet and presentation | |
| **Able to manage  PC in  Window/Linux  environment** | **PC Management (5 Hrs)** 1 .Create and format  partitions, volumes,  assigning drive letters using  disk part command **(1 Hrs)** 2 Install and update the  drivers for hardware  devices using device  manager **(1 Hrs)** 3. Create file shares and set  permission **(1 Hr)** 4.Share files to different users  and manage **(0.5 Hr)** 5. Start/stop application using  task manager **(0.5 Hr)** 6. Monitor PC performance  using task manager **(0.5 Hr)** 7. Close programs which are  not responding using task  manager **(0.5 Hr)** | **PC Management (3 hrs)** Familiarisation with  x Disk management x Task scheduler x Even viewer x Device manager x Shared folders x Services and applications Virus Different types of virus an anti  virus Using different types of  firewalls - pocket firewalls,  State-full firewalls, Application  layer firewalls and Proxy  firewalls | |
| **Able to perform  troubleshooting  and maintenance  of PC based on  the faulty  condition** | **Hardware Maintenance (25  hrs)** Service of Dead PC (4 Hrs) x Check power cable  continuity x Check SMPC DC output,  check cables and  connectors x Check cabinet power on  button Service CPU ON and no  display (4 Hrs) x Check DC power supply  from SMPS to mother board x Remove sound cord if any  and check for restoration of  booting process x Check for proper insertion  of RAM x Check for dust on mother  board x Replace SVGA cord with new one  x Check for any crack on  mother board PC x Check for overheating of  any ICs on mother board x Replace BIOS Service if system is frequently  restarting (4 Hrs) x Replace the RAM x Check for any boot virus x Check all the connections  of mother board Service if system gives  continuous beep sound (4  Hrs) x Check for proper insertion  of RAM x Check for dust on mother  board x Replace SVGA cord with  new one  Service if System not Booting (10 Hrs) x Check SATA/IDE cable and  SMPS x Check HDD partition  problem x Check CMOS battery  voltage x Check HDD parameters in  CMOS setup x Check for boot virus Service if OS not loading ( 4  Hrs) x Check RAM x Check proper installation of  Driver Software in device  manager x Uninstall recently performed  drivers  Boot in safe mode Service if system gets  frequently hanging (5 Hrs) x Check for proper working  of CPU cooler fan x Check for dust in mother  board x Run chkdisk x Check for boot virus x Boot in safe mode x Reload OS Service if system is very slow (5 Hrs) x Close all opened  applications x Run MSconfig and remove  unwanted startup  applications x Check virus affect on OS x Run Chkdisk Troubleshoot if paper is jam  in printer (5 Hrs) x Check for any loose  components in feed  assembly x Check for any blockage in  paper eject assembly x Check if paper put tray is  full x Check paper pick up sensor x Check paper pick up roller  for any damage x Check in cartridge access  cover x Remove and insert  cartridge | **Hardware Maintenance (12  Hrs)** x Explain and apply common  prevention methods x Explain Service Flow  Sequence (SFS) and  Trouble Shooting Chart  (TSC) of PC x Safetyprecautions in  handling PC, sub  assemblies and  components, Important  points to be considered  while purchasingand  replacing components.  Concept of Preventive and  corrective maintenance.  Tools required, Active &  Passive Maintenance,  Maintenance scheduling.  Need of diagnostics  program. Features,  limitations. Examples of commonly used diagnostic  programs. x Types of monitor,  Monochrome and colour,  CGA, EGA, VGA, SVGA,  Digital Analogue, interlaced  non interlaced.  Specifications and  comparison x Main components and  connectors on display cards,  display controller IC, RAM  chips and dual port feature  principle of working and use  of display memory. x LCD and TFT Monitors. x Understanding the  difference between flat  screens and CRT display  systems x Understanding the displays  memory and its effect on  quality and performance | |
| **Able to perform  basic trouble  shoot of PC** | **Basic Trouble Shooting PC  (5 Hrs)** x Check PC Power Supply **(1 Hr)**  x SMPS cables and  connections to the mother  board **(1 Hr)** x Check connection of I/O  devices to PC **(1 Hr)** x Remove and reinsert RAM and reinsert CMOS battery **(1 Hr)** x Check HDD/DVD cables **(1  Hr)** | **Basic Trouble Shooting PC  (3 Hrs)** Proper troubleshooting  Techniques for motherboards,  I/O Devices | |
| **Networking** | | | |
| **Able to understand basic computer network technology.** | Crimp and connect Cable(8 hrs) 1. Crimp Straight Cable using Different Color Codes (1 Hrs) 2. Crimp Cross Cable using Different Color Codes (1 Hrs) 3. Crimp Rj45 connector with Straight and Cross cable (1 Hrs) 4. Check signal transmission using LAN TESTER (1 Hrs) 5. Install and configure Peer to Peer connection. (2 Hrs) 6. configure IP Address (2 Hrs) | Overview of Networking (10 hrs) Introduction to networks, LAN, VLAN, CAN, MAN, WAN, Internet and Intranet etc. Uses and benefits of Network, Server-client based network, peer to peer networks. Network Interface Card, Crimping tools and Color standards for Straight crimping and Cross crimping | |
| **Able to understand Basic Networking Concept** | Server Configuration & Backup(10 hrs) 1. Install and configure Server-Client Network ( 2Hrs) 2.Backup and Restore User Data ( 2 Hrs) 3. Permit FAT and NTFS Sharing (2 Hrs). 4. Study of different type of cables ( 1 Hrs) 5. Design and configire Mesh topology in cisco packet tracer ( 1 Hrs) 6. Design and configire Ring topology in cisco packet tracer ( 1 Hrs) 7. Design and configire star topology in cisco packet tracer ( 1 Hrs) | Transmission Media and Topologies Media types:(15hrs) Concept of Server, client, node, segment, backbone, host etc. Analog and Digital transmission STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and Broadband transmission, Cables and Connectors, Physical and logical topologies, Bus, Star, Ring and Mesh topologies. Concept of Asynchronous & Synchronous Transmission | |
| **Networking Protocol** | Configure Network Protocol ( 10 Hrs) 1. Enable/disable DHCP from Network setting in PC ( 1 Hrs) 2. Configure IPv4 and IPv6 ( 1 Hrs) 3. Configure TCP/ IP ( 2Hrs) 4. Install and Configure FTP Services. (3 Hrs) 5 Install and Configure HTTP Services (2 Hrs) | Protocols and Services ( 5 Hrs) 1. TCP/IP,HTTP, FTP,SMTP and other Different types of protocols 2. OSI Model 3. Media Access Method 4. DNS services 5. DHCP services 6. WINS services 7. Web services 8.Proxy Services. | |
| **Able to Install & configure the different types of network devices in a network.** | **Network Devices(25 hrs)** 1. Configure & Implement Unmanageable Network Switch (2 Hrs) 2. Configure & Implement Manageable Network Switch (2 Hrs) 3. Configuring and Troubleshooting a Switched Network ( 1 hrs)  3. Install and configure router, bridges and HUB (3 Hrs) 4. Configure Wireless Access Point ( 2 Hrs) 5. Install and Configure Wire Network ( 2 Hrs) 6. Install and Configure Wireless Network ( 2 Hrs) 7. Install of AD-hoc Wireless Network ( 1 Hr) Manage Broad Band 8. Configure Gateway Service for Internet Connectivity (3 Hrs) 9. Configure ADSL+2 Router for ISP Internet Connectivity (2 Hrs) 10. Troubleshoot Internet Connectivity (5 Hrs) | **Network Devices(15 hrs)** 1. Functions of NIC 2. Repeaters 3. Hub 4. Switches 5. Routers 6. Bridges. 7. Internet service provider | |
| **Able to configure and manage network security.** | **Skills on Network Security(25 hrs)** 1. Managing Server Network Security (3 Hrs) 2. Set up security base line (2 Hrs) 3. Configure Audit Policy (2 Hrs) 4. Monitor and Troubleshoot Network protocol (3 Hrs) 5. Configure Protocol Security (2 Hrs) 6. Plan security for Wireless Network (1 Hr) 7. Install and Configure Different Antivirus Software (2 Hrs) 8. Install and Configure Admin Console ( 3 Hrs)􀁸 Configure a Local Security Policies ( 2 Hrs) 9. Configure Domain Security Policies ( 3 Hrs) 10. Configure RRAS Policies ( 2 Hrs) | **Network Security(15 hrs)** 1. Modern Network Security Threats and the basics of securing a network. 2. Secure Administrative Access 3. LAN security considerations. 4. Network Security Devices. | |
| **Able to configure and perform remote accessing & routing.** | **Remote Access(25 hrs)** 1 Manage TCP/IP Routing (5 Hrs) 2 Configure Remote Access Authentication Protocol (5 Hrs) 3 Connect remote Desktop using Remote Assistance (5 Hrs) 4 Connect Remote Desktop using Telnet (3 Hrs) 5 Connect Remote Desktop using HyperTerminal ( 2 Hrs) 6 Connect Remote Desktop using Team Viewer (5 Hrs) | **Remote Access (15 hrs)** 1. Overview of Remote Access 2. VPN Concepts. 3. Remote Access Authentication Protocol 4. TCP/IP Routing | |