Computer and Peripherals, Maintenance Service & Repair
Second Semester

1. Digital Electronics

Introduction- Definition of digital electronics, digital signals, about number system, nibble, bit, byte, Binary number system, Decimal number system, Octal Number System, Hexadecimal number system.

Computer Arithmetic- Conversion of Number System, Binary to Decimal, Octal to Decimal, Hexadecimal to Decimal and vice versa, Addition, Subtraction, Multiplication, Division, Complements, BCD numbers, Gray, Excess -3, Hamming codes.

Logic Gates- Introduction, AND, OR, NOT, NAND, NOR, EX-OR and EX-NOR gates, Universal gates, Logic gate operations, Classification and Characteristics of digital ICs.

2. Basics of Computer Operating Systems and Securities

Software- Computer Software, Types of Software, System Software, Application Software, Uses of software.

Operating Systems- Definition of Operating System, Function of Operating System, Classification of OS, Difference Between Windows, Mac and other Operating Systems, Uses of OS.

Securities-Computer Viruses Types Of Viruses, How Viruses Are Spread, Prevention of Computer Virus, Virus Detection, Computer security tools.

3.   Fundamentals of Networking-I

Overview- Definition of Networks, Classification of Network by Geography, LAN, MAN, WAN, Topologies,

Network Hardware – Network adapters, Types of Network Cables, Hub, Switches, Bridge, Routers, Repeaters, Access Points,

Fundamental design of Network-Overview of Networks, Layers, Data Rate, Throughput and Bandwidth, Packets, Datagram, Routing Loops, Congestion, IP - Internet Protocol, DNS, Firewalls.

4. Computer Assembling, Maintenance and Repair

Introduction-About Configuration, Structure of a PC, Microprocessors, RAM, BIOS, Motherboards, Power Supplies, Essential Peripherals, Windows, Users, Groups, and Permissions, Maintaining and Optimizing Operating Systems, Command-Line Interface.

Hardware-Different types of panel controls and ports on a PC, Cases, Cooling, Cables & Connectors, Power Supplies, Power Supply Connections, Motherboard Connections, Motherboard Components, CPU (Processor) ,RAM (Memory), Hard Drive Technologies, Implementing Hard Drives, Hard Drive Connections, Mechanical vs. Solid State Drives, ROM Drives, Video Cards , Sound Cards

Installation of Windows and drivers- Brief Introduction of Windows XP/7/8/10, Installation of Windows XP, Create a Windows system Image, How to Backup/Restore your Windows partition with the bootable image disk/USB, Installation of multiboot system, Windows boot manager vs. an alternative boot manager, Setting up a multiboot/dualboot system, Dual Boot Ubuntu and Windows, Installation of Windows 7/8/10 with bootable Disk or USB, Troubleshooting Operating Systems , Installation of Device Drivers.

5. Computer Peripheral I/O Installation and Maintenance

Introduction- Introduction to Computer peripheral devices, Input Devices-Keyboard, Mouse, Scanner, Webcam, USB and other, Output Devices-Printers, Display Devices, Speakers and other.

Installation and Maintenance of I/O Devices- Types of printers, Installing and testing a printer, Printer Maintenance, Scanner Installation, Webcam Installation.

PC Internal Hardware Installation- Removing RAM, Installing RAM, Removing a ROM Drive, Installing a ROM Drive, Removing a Hard Drive, Installing a Hard Drive, Defects related to SMPS, its cable, connector and servicing procedure, Removing a Power Supply, Installing a Power Supply ,Removing a Video Card, Installing a Video Card, Install Expansion Cards, Removing Fans, Installing Fans, Removing the Motherboard, Installing the Motherboard, Removing the Processor , Installing the Processor, Installing a CPU Cooler, Troubleshooting, Checking the Power Switch, Removing the CMOS Battery, Seating Expansion Cards.