Hardware Syllabus:

Part I:

A. Basic Electronics & Measuring
B. Computer Hardware & Peripherals
C. Operating System & Diagnostics Tools
D. Basic Software
E. Practical Lab (101,102,103)

Part-II:

A. Principal of Digital Electronics
B. Printer Services
C. CCTV Services
D. Biometric Services
E. Practical Lab (201,202,203)
F. Project & Field Exposure

Part I

A. Basic Electronics & Measuring Instruments

1.1. Basic Electricity and conducting Material.

Introduction, Current, Voltage, emf, Power generation system, Switch- plug wiring, Analyzing Conductivity of elements, Types of Conductors, Semi conducers - Silicon, Germanium.

1.2. Electronics Components.

Resistors, Capacitors, Inductors, Transforms, Types, working and Properties, Voltage and Currant sources, Diode, Zener diode, Photo diode, Light emitting diode (LED), Transistors (NPN, PNP), their characteristics and uses, Field effect transistor, Photo transistor.

1.3. Electronics Circuits: AC Fundamentals, Ohm's law, Series and Parallel connection of Registers and Capacitors, Half wave rectifier, Full wave rectifier and Bridge rectifier.

1.4. Regulated Power Supply.

Basic regulated power supply using Zener diode
Block diagram of IC based Power supply.
Basic Switch Mode Power Supply (SMPS)
Basic uninterrupted Power Supply (UPS)

1.5. Basic Measuring Instruments.

Multimeters – Electronics and Digital,
Different tools used for practical's, Soldering and desoldering practice

B. Computer Hardware & Peripherals

2.1 Microprocessor System

Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices,
Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors

2.2 Introduction to PC Architecture

Study of PC-AT/ATX System, Pentium, Core, Core 2 Cord, Core 2 Duo, I3, I5, I7 Processor
Basics of Processor and CPU
Block Diagram of Computer and Computer Generation
Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

2.3 Internal Components

IDE and SATA Devices: Hard Disk Drive and CD/DVDs Drives,
SCSI Devices, Floppy Disk, Zip Drive, Backup Drive,

Expansion Cards- LAN Card, IDE Card , VGA and SVGA Cards, Sound Card, Interface Cards, I/O cards, Video
Cards, USB Card, Fire-Wire Cards, Internal Ports, Cables and Connector Types.

2.4 External Components

Monitors:- CRT, LCD and LED Displays,
Printers:- Dot-Matrix Printer, Inkjet Printer, Laser Printer
Scanner:- Photo Scanner, Documents Scanner, Bar Cord Scanner
Keyboards, Mouse, External Modem, Ports and Connectors, Batteries, Power supply, Pen Drives, SCSI interface
devices, Laptop Computers, Digital Advance storage technology.

2.5. Network Components

Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch,
Router, Modem, Wi-Fi, Access Point, PCI Wireless Card, USB Wireless Device, Print Server, USB Network Sharer,
Backup Device, Server Hardware etc.

C. Operating System & Diagnostics Tools

3.1 Operating System Basics & Installation

Introduction to OS, Types of Operating systems, System files FAT and NTFS
Dos 6.22, Windows XP, Windows Vista, Windows 7 and Windows 8 and RedHat Linux and Multi Boot Operating System

3.2 Various types of Software Installation

MS-Office2003, Office 2007, Office 2010, Photoshop 7 and CS5, PageMaker 6.5, Corel-Draw X3, Auto-CAD, Tally 7.0 and ERP, Acrobat Reader X, Java, Visual Studio, C & C++, Multimedia software's, and Internet Browsers like- IE9, Google Chrome, Mozilla Firefox etc.

3.3 Device Installation

Graphics Card, Sound Card, LAN Card, Wireless LAN Card, SCSI Card, External Drive, Flash Cards, Web Camera, CCTV Camera, Mobile Devices, Pen Drive, Firewire Cards, Modem, Plotter, Wireless LAN, Access Point etc.

3.4 Diagnostic Tools & PC Maintenance

Introduction, Virus and its types, Effect of Virus for Computer System, Scanning and Antivirus remover tools, Antivirus Utilities for Diagnostic, Safety and Preventive Maintenance Tools, Data Recovery, Concept of Fax and E-mail, PC care and Maintenance, Electrical Power Issues, Troubleshooting PC Hardware: - O/S Troubleshooting issues in computer System

3.5 Basic Network Introduction & Installation

Introduction About Network, Installing Network Operating System Windows 2003 Server and Windows 2008 Server, Cable Crimping, Network Sharing and user Permission, Internet Connection, E-Mail, Cloud Networking, Google Drive, SkyDrive, Dropbox etc.

D. Basic Software

1. Microsoft Package
2. Paint
3. MS Excel
4. MS word
5. Browser

E. Practical Work

1. Switch Board Wiring and Testing
2. Soldering and De-Soldering Practice
3. Component Testing and Symbols
4. Voltage Measurement of Different Circuits
5. Testing and Measurement of SMPS
8. Assembling of a Computer
9. Installation of different Operating Systems
10. Installation of different device drivers
11. Installation of different Application Software
12. Biometric Security Device Installation and Configuration
13. To Run All Dos Command (Internal and External Dos Command)
14. Assembling and Dissembling Of a Computer System

15. Installation of Different Operating Systems : Windows XP, Windows 7
16. Troubleshooting and Repair Operating System : Windows XP, Windows 7
17. Tacking Data Backup and System Formatting and OS Installation
18. Installation of Different Device and Drivers PCI, PCI-E, AGP
19. Installation of Ms Office 2003, Ms-Office 2007 and Ms-Office 2010
20. Installation of On Board and PCI Device Driver
21. Installation of Web Camera and CCTV Camera Drivers and Software
22. Installation of Application Software : Photoshop 7.0, Page Maker 6.5, CorelDraw 12
23. Installation of CD-DVD Burning Software like: Nero 7.0 & PowerISO 4.0
24. Installation of Tally 7.2 and Tally ERP 9.0 and Tack Data Backup
25. Installation and Troubleshooting Different types of Antivirus Software
26. Installation Dual Operating System like: Windows XP and Windows 7
27. Installation and Troubleshooting of Printer (Dot-Matrix and Laser Printer)
28. Installation and Troubleshooting of Scanner (Photo & Bar Code Scanner)
29. To Repair and Troubleshooting of SMPS, Monitor, Printer and Motherboard
30. To Install All Types of Connectors and Converters
31. To Run All Types of Network Troubleshooting Command

Part II:

PRINCIPLES OF DIGITAL ELECTRONICS

1.1 INTRODUCTION TO DIGITAL ELECTRONICS:

Basic difference between analog and digital Signal
Application and advantages of digital signal processing

1.2 NUMBER SYSTEM:

Decimal odometer, Binary odometer, Why Binary numbers are used,
Binary, Decimal and Hexadecimal number system; Conversion from decimal and hexadecimal

to Binary and vice versa, BCD numbers,
ASCII code, Basic Concept of parity.

1.3 LOGIC GATES & LOGIC FAMILIES:

Definition symbols and truth tables of NOT.AND, OR, NAND, NOR, EXOR Gates.
Simple application in developing combinational logic circuits
Diode Logic, Transistor Inverter, TTL Logic

1.4 FLIP LOPS:

Brief idea of flip-flops and their operations

- RS Latches
- Level Clocking
- D – Catch
- JK Flip- Flops
- JK Master – Slave Flip- Flops

1.5 REGISTERS, COUNTERS AND MEMORIES

- Buffer Register
- Shift Register
- Synchromes Counters
- Ring Counters
- ROMs, PROMs and EPROM's
- ROMs
- Small TTL Memories.

Printer Services

Types of printers

A. Dot Matrix (136 columns,80 columns)
B. Inkjet Printer.
C. Laser Printer.
D. Multifunctional Printer.

Driver installation:

A. Creating virtual port.
B. Raw file format.
C. Common Driver installing.

Changing cartridges

Sharing printers

Different issues on printer

CCTV Services

1. Different types of CCTV camera
2. CCTV Camera installations
3. CCTV Camera Services
4. Different issues on CCTV
5. Mobile configuration
6. Laptop Configuration

Biometric Services

1. Different categories of biometric
2. Installations of biometric
3. Retrieving data from biometric

PRACTICAL LAB (201,202,203)

1. Installing and Configuring Windows 2003 and 2008 Server

2. Cable Crimping using Different Color Codes (Straight and Cross Cable)

3. Installation and configuring Peer to Peer and Server-Client Network

4. Installation and Configuring Active Directory Services

5. Installation and Configuring DNS & DHCP Services

6. Installation and Configuring FTP, HTTP Services
7. Backup and Restoration for ADS, DHCP and User Data
8. FAT and NTFS Sharing Permission
9. Configuring & Implementing Unmanageable Network Switch
10. Configuring & Implementing Manageable Network Switch
11. Configuring a Local Security Policies & Domain Security Policies
12. Installing Printer in Windows XP, Windows 7, Windows 2003 & 2008 Server
13. Configuring Gateway Service for Internet Connectivity
14. Configuring ADSL+2 Router for BSNL Internet Connectivity
15. Configuring Wireless Access Point
16. Installation and Configuring Wire Network
17. Installation and Configuring Wireless Network
18. Installation of AD-hoc Wireless Network
19. Installation and Configure Different Antivirus Software and Admin Console
20. Remote Desktop, Remote Assistance, Telnet, HyperTerminal, TeamViewer

Project & Field Exposure:

A project has to be done on this.

Networking Syllabus:

1. Basic networking concepts,
    - 1.1 Network topologies:
        - 1.1.1 LAN, WAN, MAN, PAN, CAN.
    - 1.2 Networking Model
        - 1.2.1. The OSI model
        - 1.2.2. TCP/ IP Model
    - 1.3 Network adapters.
    - 1.4 Introducing protocols.
    - 1.5 Cabling and troubleshooting.
2. Introduction to various networking devices:
    - 2.1. Routers.
    - 2.2. Switches.
    - 2.3. Modems.
    - 2.4. Hubs etc.
    - 2.5. Wired and Wireless technology.
3. Network basic and configuration:
    - 3.1. Setting IP addresses,
    - 3.2. Sharing files and folders.

3.3. Network troubleshooting.

3.4. PING test, ipconfig etc.

4. Introduction to servers and network security

4.1. Types of servers:

4.1.1. Files servers,

4.1.2. Email Servers,

4.1.3. Proxy servers etc.

4.2 .Basics of Internet and Intranet:

4.3 .Types of Internet connections:

4.3.1 Dialup, Broadband, Leased Line, Wi-Fi,

Wi-Max, 2G, 3G, 4G, WWW, E-mails,

Search Engines, Social Networking.

4.3.2 Cloud application.

4.3.3 Audio-video Conferencing.

4.3.4 Voice over Internet Protocol (VOIP).

4.4. Recovery and backup.

4.5. Essential security measures.