General Back ground Information on the Course "INFORMATION TECHNOLOGY"

Sector	**IT&ITES**
Coordinator	**Naresh Chandra, JDT, DGE&T, New Delhi**
Existing Scheme	**CoE (Centre of Excellence)**

Existing course name	**CoE – (6 Basic Modules)**
	    ITBT 01-Basic Electrical and Electronics
	    ITBT 02-Basic Assembling and Maintenance of PCs
	    ITBT 03-Basic Computer Networking
	    ITBT 04-Basic Office Automation
	    ITBT 05-Basic Internet and Multimedia
	    ITBT 06-Basic Database Processing
	CoE – 3 Generic Modules
	    ITBT – 07- WORKSHOP CALCULATION & SCIENCE
	    ITBT – 08- ENGINEERING DRAWING
	    G – 01- ENTREPRENEURSHIP AND
	          COMMUNICATION SKILLS
	CoE – 7 Advanced Modules
	    ITAT-01 -Repair & Maintenance of Hardware of
	          Computer & Peripherals
	    ITAT-02- Computer Networking
	    ITAT-03- Multi Media & Web page Designing
	    ITAT-04- E- Accountancy & Office Management
	    ITAT-05- Multi Media & Creative Designing
	    ITAT-06- Information System Management
	    ITAT-07- Digital Video Graphy

Seating Capacity (existing)	**16 per module**
Entry Qualification (existing)	**Passed 10th with Science and Maths as subjects.**
NCO CODE	**To be generated** (reviewed version of " Basic Modules and Advanced Modules")
Duration	**2 Years (four Semesters)**
Additional Course Proposed	**None**
Course proposed to be deleted	1. **CoE (IT sector) to be deleted.** 2. **Existing 6 Basic Modules, 3 Generic Modules and 3 Advanced Modules(ITAT-01 -Repair & Maintenance of Hardware of Computer & Peripherals,ITAT-02- Computer Networking,ITAT-03- Multi Media & Web page Designing) have been reviewed & restructured to form a new course "Information Technology" under CTS pattern.**

Structure	Practical *For each Semester*	Existing	**28 Hours / week. + 4 Hours / week have been kept for Library studies & Physical Training**
		Proposed	**5 hrs x 5 days x 24 Weeks + 7 hrs x 5 days x 1 Week + 1 Hrs/Week (for Group study/Discussion, Library reference, Seminar, Net Surfing)**

		Reason	**1 Week for Semester Examination**
	Theory *For each Semester*	Existing	**4 Hours / week. + 2 Hrs. / week (Workshop Calculation & Science) + 2 Hrs/Week (Engineering Drawing) + 2 Hrs/Week (Entrepreneurship and communication skills).**
		Proposed	**2 hrs x 5 days x 24 Weeks + 2 Hrs/Week (Workshop Calculation & Science) + 1 Hrs/Week (Engineering Drawing) + 1 Hrs/Week (Employability Skill).**
		Reason	**1 Week for Semester Examination**
Infrastructure Development	Equipment(Existing)		**For Sem – I & II, 100% can be retained, For Sem – III & IV 90% can be retained those who are running ITAT – 01,02 & 03.**
	New Equipment (Desirable)		**For Sem – I & II, nothing to be procured, For Sem – III & IV 10% is to be procured those who are running ITAT – 01, 02 & 03.**
Instructor Eligibility	Existing		-
	Proposed		***Technical –*** **(i) Graduate in Engineering / Technology in Computer Science / IT from Recognized university *OR*** **(ii) Post Graduate in Computer Science / Computer Application / IT *OR* NIELIT "B" Level *OR*** **(iii) Bachelor in Computer Science / Computer Application / IT *OR* PGDCA OR NIELIT "A" Level *OR*** **(iv) Three year Diploma from recognized Board / Institution in Computer Science / IT *OR*** **(v) National Apprenticeship Certificate or National Trade certificate in the trade of Information Technology and National Craft Instructor Training Certificate in trade if available.** ***Experience in relevant field after eligible qualification–*** **For (i) & (ii) - One year** **For (iii) & (iv) - Two years** **For (v) - Three years after NTC/NAC**
Instructional Material	Book	Available	
		Additional	
	Teachers manual	Available	
		Additional	
	Question bank	Available	
		Additional	
Distance Learning	To be developed		**Yes**
	Not required for this course		-
On-the-job training/field work/in-house project work including no. of hours			**In-house project. 1 week / semester.**

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Draft Syllabus for the Trade of

Information Technology

Under

Centre of Excellence

**Designed in
2014**

**Government of India
Ministry of Labour & Employment
D.G.E. & T**

INFORMATION TECHNOLOGY

Name of the Sector	**IT & ITES**
Name of CTS Course	***INFORMATION TECHNOLOGY***
CTS Code	**To be generated**
Competency as per N.C.O. Code	**To be generated** (reviewed version of "6 Basic Modules and 7 Advanced Modules")
Duration of Course	**Two Years divided in four Semesters of Six Months each.**
Entry Qualification of Trainee	**Passed 10th with Science and Maths as subjects.**
Unit size (No. of Trainees)	**20**
Power Norms	**3.45 KW**
Space Norms (Workshop and Class Room)	**Lab. - 70 Sq. m., Class Room – 30 Sq. m.**
Qualification for the Instructor	*Technical* – (i) **Graduate in Engineering / Technology in Computer Science / IT from Recognized university** *OR* (ii) **Post Graduate in Computer Science / Computer Application / IT** *OR* **NIELIT "B" Level** *OR* (iii) **Bachelor in Computer Science / Computer Application / IT** *OR* **PGDCA** *OR* **NIELIT "A" Level** *OR* (iv) **Three year Diploma from recognized Board / Institution in Computer Science / IT** *OR* (v) **National Apprenticeship Certificate or National Trade certificate in the trade of IT/ICTSM and National Craft Instructor Training Certificate in trade if available.** *Experience in relevant field after eligible qualification*– **For (i) & (ii) - One year** **For (iii) & (iv) - Two years** **For (v) - Three years after NAC/NTC**

Job Role:

The role of a **INFORMATION TECHNOLOGY** personnel is to support and maintain computer systems, desktops, and peripherals. This includes installing, diagnosing, repairing, maintaining, and upgrading all hardware and equipment while ensuring optimal workstation performance. The person will also troubleshoot problem areas in a timely and accurate fashion, and provide end user training and assistance where required. Install, maintain and setup network with computers, printers and other peripheral equipment as well as configure broadband equipment.

In a Nutshell :

- Installing software or hardware
- Maintaining and repairing equipment / peripherals.
- Troubleshooting different computer issues
- Determining and installing appropriate security measures
- Installing & Configuring advanced computer networks
- Providing technical support on-site or via phone or email
- Install, configure, and maintain common end user application software. May train and provide assistance to end users.
- Troubleshoots software and hardware problems related to Internet applications.
- Assist the information technology administrators with configuration, maintenance and monitoring of access servers, routers, Microsoft and Linux servers and Internet servers including DNS, radius, web, LDAP, e-mail, network monitoring and print servers.
- Assist in preparing, maintaining, and upholding procedures for logging, reporting, and statistically monitoring PC performance.
- Accurately document instances of hardware failure, repair, installation, and removal.
- Assist in developing long-term strategies and capacity planning for meeting future computer hardware needs.
- Support development and implementation of new computer projects and new hardware installations.
- Investigate, analyse and recommend appropriate equipment and software to achieve clients' objectives
- Prepare flow charts and storyboards to outline multimedia and web product concepts
- Prepare code to produce the multimedia & web product
- Prepare digital graphics, animations, sound, video, photographs and images for editing
- Prepare multimedia and web design concepts
- Editing digital graphics, animations, sound, video, photographs and images.
- Manage the development and implementation of multimedia and web products.

Syllabus for the Trade of
"INFORMATION TECHNOLOGY"
Under CoE

Semester – I   *Duration : 6 months*

Week No.	Practical	Theory	Engineering Drawing	W/Cal. & Sc.
1	**SAFETY:** Practice of safety while lifting and shifting fragile and heavy equipments. Check earthing and identify the type of earthing. Practice electrical safety while connecting, switching-on and switching-off of heavy electrical outlet points. Practice first aid in case of physical injury. Practice first aid in case of electrical hazard.	**SAFETY:** Safety of working personal and equipment. Safety while lifting and shifting of fragile and heavy equipments. Safety precautions. Earthing, need and importance of Earthing, Types of earthing, Electrical safety. Electrical safety precautions. First aid in case of physical injury. First aid in case of Electrical hazard.	Engineering drawing and its importance	Basic algebra – algebric formula – quadratic equations
2	Identify AC & DC voltmeters/ Multimeters. Measure DC voltage of a given battery-pack. Measure mains AC voltage. Identify different types of wires used for interconnections (Single stand, multi strand, twisted pair) Test wires and cables. Wiring harness. Skin wire ends and tinning. Terminate wire ends with lugs and connectors. Crimping practice with RJ connectors Practice Domestic wiring using different components of wiring..	Electricity, Potential difference, AC & DC voltage, Current, Waveform, measuring devices (meter). Conductors, Insulators and semiconductors, examples and applications. Domestic electrical wiring - requirements Testing continuity of wires. Skinning and tinning of wires and cable ends	- Do -	- Do -

3	Identify different types of resistors. Find value of resistors and its tolerance using colour code. Measure resistance-using multimeter. Measure effective value of resistors in series, parallel and series-parallel. Measure branch currents and node voltages of a series-parallel circuit (Kirchoff's law). Solder single stand wires on to Lug board. Solder single and multiple solder joints. Solder Resistors on to a lug board. Solder Semiconductor device on to a lug board. Solder a given circuit (consisting of resistors and semiconductor diodes on a lug board. Solder a resistor, a semiconductor device and an IC on lug board. Practice de soldering of above soldered components.	Resistors, types, specifications, applications, identification using colour code, Resistors in series, parallel and series parallel. Ohms law and its application, KCL & KVL Solder joint. Soldering requirement & practice, Common soldering defects. De soldering – Precautions & practice. Application of PCB's. Types of PCBs, specifications. List some Connectors used with PCB	Types of lines and their applications	Trigonometry – Trignometric functions – calculation of areas
4	Capacitor – measuring the value, colour code. Measure capacitance using LCR meter. Identify of different types of inductors. Measure inductance using LCR meter. Test a step up transformer and finding transformation ratio. Testing a step down	Capacitor, types, specification, capacitors in series and parallel - applications Magnetism. Faradays Laws. Inductance, Inductor-types, specifications, applications. Measurement of	- Do -	- Do -

	transformer and finding transformation ratio. Study Electro-magnetic effect using Electric Bell, Solenoid.	inductance, Inductance in series and parallel. Inductive reactance. Self & mutual Inductance - properties, applications. Transformer, principle, construction, types, rating and applications. Testing a given transformer.		
5	Identify different types of rectifiers and terminals. Refer to Diode handbook to get a diode for a given application and rating. Testing a given diode. Construct and test a Half wave rectifier. Construct and test a Full wave rectifier. Construct and test a Bridge rectifier. Test LED's. Use LED as output indicator in DC power supplies.	Semiconductor device. Rectifier diodes, types, specifications and applications. Half wave rectifier, construction, working, output voltage, current rating, and output ripple. Efficiency, limitations, applications. Full wave rectifier, construction, working, output voltage, current rating, and output ripple. Efficiency, limitations, applications. Bridge rectifier, construction, working, output voltage, current rating, output ripple. Efficiency, limitations, applications. LED's, types, specification and applications. Using LED as indicator lamps.	Free hand sketching of tools	Mensuration – Find the area and volume of different objects conversion of feet, inch, cm, mm
6	Identify different types and packages of transistors. Identify transistors leads/terminals. Testing of transistors, Find a required transistor referring to Transistor data book. Testing amplification of	Principle of working of a transistor. PNP and NPN transistors. Specification of transistors. Identification of transistors, terminals. Referring to Data book for selecting a transistor. Biasing of	- Do -	- Do -

	different configurations using pre wired kits. Test cascaded amplifiers using pre wired kits.	transistors – types, advantages, and applications. Types of amplifiers, working and applications. Cascaded amplifiers, types and applications.		
7	Familiarization and using CRO & function generator Test harmonic oscillators using pre wired circuits. Construct and test relaxation oscillators using pre wired circuit. Measure parameters of Pulses using oscilloscope.	Oscillators, types, Harmonic-LC, RC, Crystal and relaxation-UJT, Pulse, pulse parameters, implications. Pulse circuits, multivibrators, applications.	Lettering practice	Find the equivalent resistance on series circuit, parallel circuit
8	Construct and test a Thyristor based power supply. Testing op-amp, testing and analyzing results of an OP-Amp. Wire and test a Multistage IC amplifier. Construct and test a 3-pin Voltage regulator. Construct and test an IC variable output Voltage regulator. Trace circuit of PC SMPS. Fault finding of SMPS used in PC. Troubleshoot SMPS used in PC's. Trace circuit, Fault finding and troubleshoot Power supplies used in PC I/O devices.	DIAC, SCR, TRIAC-principle of working, specifications, applications. Circuits and application. Differential amplifiers, OP-Amps, principle, characteristics, advantages, applications. List a few commonly used op-amps, Amplifiers in integrated circuit forms. IC oscillators -IC 555 Other types of linear IC's and applications. Voltage regulator - zener diode, principle, application, limitations. Shunt and series regulators, applications, limitation. IC voltage regulators-fixed/variable, specifications, testing. Multiple output regulators, package details of some	- Do -	- Do -

		common IC regulator Comparison of linear and Switch mode power supplies. Working of SMPS. Types, specifications and applications. Circuit tracing of SMPS. Faultfinding and Troubleshooting approach of SMPS with emphasis on power supplies used in PC's and its I/O devices.		
9	Test Dry cells. Identify of different types and sizes of button cells. Test button cells. Check the specific gravity of electrolyte. Checking battery using discharge tester. Top-up secondary batteries. Connecting secondary batteries in series/ series parallel. Identify a dead/defective battery in a chain of batteries. Charge batteries. Connect batteries with UPS and test.	Primary and secondary batteries. Dry cells, specification. Button cells, types and applications - testing. Secondary battery types, specification, construction, Routine maintenance, Electrolyte- specific gravity, charging batteries. Maintenance free batteries. Use of batteries with UPS. Safety precautions	Dimensioning their methods and specific uses	Find the equivalent resistance, voltage and current across each component of a series circuit, parallel circuit and series parallel circuit.
10	Convert Decimal to Binary and reverse. Convert of Binary to octal and reverse. Convert of Binary to Hexadecimal and reverse. Identify given IC's using digital IC handbook. Verify the truth table of NOT, AND, OR, NAND and NOR gates. Construct a logic circuit using basic gates for a given output	Comparing Analog and Digital signal. Application of Digital electronics. Number system, Binary, octal and hexadecimal. Boolean algebra, D'Morgans theorem. Simplification of logic circuit. Identification of Digital IC's, Types of packages, applications. Basic digital gates and truth tables.	- Do -	- Do -

	logic.			
11	Construct a 1's compliment & 2's compliment circuit and verify Construct and verify the truth table of flip-flop Construct and test a serial and parallel shift register Construct and test a 4-bit binary counter	1's & 2's compliment Flip-flop, register & counter Making a logic circuit for any custom requirement	Types of projections	Solve the series parallel and network circuits using Kirchoff's Law
12	Identify the external I/O and memory devices connected to the PC. Identify the controls of each of these devices including the system (CPU) unit. Disconnect the external I/O and memory devices connected to the PC. Re-connect external I/O and memory devices connected to the PC.	Basic blocks of a digital computer. Function of each block. Personal computer organization. Introduction to various generations of PC's. Brief working and usage of I/O and memory devices used in a PC.	- Do -	- Do -
13	Practice windows operating system. Practice using notepad. Practice using paint. Identify system specifications. Use device manager to check status of installed devices. Identify and record IRQ. Make a start-up/emergency diskette. Uninstall, Reinstall and make settings for the following devices using Device manager: Keyboard, Mouse, Display, Multimedia, Printer, Modem, Web	Working with computer using windows operating system. Obtaining system information. Ports on a PC and its specifications. Hardware interface and driver. IRQ and DMA. Making startup/emergency diskette. Installing and setting keyboard and mouse. Installing and setting Display. Installing and setting Printer. Installing and setting multimedia. Installing and setting	Simple orthographic projections in 1st angle method	Series and parallel circuits of capacitors / Induction

	camera and other such external devices.	Modem. Installing and setting web camera and other devices.		
14	Remove SMPS from cabinet, test SMPS for good working condition and refit to cabinet. Identify the internal parts of a PC. Identify cable connections inside a PC.	Memory Types and uses. Computer main memory, specifications, compatibility, expandability, types, manufacturers. SMPS used in PC, Specifications, types of connectors, testing.	- Do -	- Do -
15	Identify the specifications of motherboard. Identify the components of a motherboard. Remove, identify and refit add-in cards Remove, identify and refit RAM, Processor. Practice CMOS setting. Remove and refit FDD. Remove and refit HDD. Remove and refit CD ROM drive. Partition HDD, Format HDD, Load opera system. Load multiple Operating system (Windows & Linux). Test working.	Mother board, types, specifications, components on the motherboard and its functions. BIOS, CMOS setup. FDD, principle of working, types, capacity, connecting to motherboard. Hard disk, types, specifications, manufacturers. Connecting to the motherboard. Jumper setting. Partitioning, formatting. Non dos partitions. Loading operating system. Loading multiple OS. Loading application packages.	3rd angle projections of various objects and exercises with dimension	Problems on series ac circuits, impedance, power and power factor
16	Assemble PC given all components. Check for working. Identify defect (Hardware/software). Rectify defect. Identify possibility of upgrading a given PC to given specification. Collect and up grade PC. Check working of upgraded PC.	CDROM drive, principle of working, types, specifications, manufacturers, connecting, jumper setting. COMBO drives. Identifying and Trouble shooting software related problems.	- Do -	- Do -
17	Load maintenance utilities to check system	Identifying and Trouble shooting hardware	Isometric views of	Series and parallel

	performance. Test and report system performance.	related problems. Disassembling precautions and procedure. Assembling of PC for a given requirement. Upgrading of PC in respect of main memory, HDD, ZIP, DAT and other special devices.	objects	resonance circuit
18	Identify components of a simple LAN environment. Identify different types of cables used for networking. Identify the protocols installed in an existing LAN setup. Draw LAN diagram	Serial data communication, principle, standards/protocols and devices/ applications. Parallel data communication, principle, standards/protocols and devices/ applications. Features of Networked computers.	- Do -	- Do -
19	Identify the NIC installed & MAC address Install of NIC card. Make UTP cross cable and testing using continuity tester. Establish connection between two computers using a cross cable.	Components required for networking. Network Topologies. Comparison. Network Protocols, applications. Physical components planning for a small LAN. Network operating systems and features.	1st angle and 3rd angle projections of a computer monitor, floppy disk drive and hard disk drive	Find the turns ratio, efficiency and losses in transformers
20	Make a UTP straight patch cord and testing using continuity tester. Connect and test a straight cable using a N-port switch and computers. Establish a peer-to-peer connection.	Network cables, types, specifications, standards, application. Peer – to – peer connection. Client – server connection, comparison, applications.	- Do -	- Do -
21	Configure a router Add/Delete entries in configuration task. Create work groups.	What is router, its function, configuration table. Concept of work groups and uses.	- Do -	the average dc, load current and efficiency,

				ripple factor, in half wave and full wave rectifiers
22	Set IP address and subnet mask. Establish connection. Use of Ping command. Establish sub networks using subnet mask.	UTP Cross cable for testing connection between two computers. UTP straight cable and connecting through N-port Switch. Allocation of IP address and Subnet mask.	Draw the symbols for various electrical measuring instruments, switches, fuse, protective and controlling devices in electrical circuits	- Do -
23	Share resources in LAN. Fault find and troubleshoot network problems. Trace a network route. Create users, allocate rights and testing. Implement security in LAN.	Cabling procedures and introduction to structured cabling. Resource sharing in LAN environment. Creating users in Widows server. Resource sharing and Security. Sharing a single internet connection in LAN, with or without the use of Proxy.	- Do -	Find the IB, IC, IE in various types of biasing circuits and transistor configuration circuits
24	Use Linux commands. Install and uninstall devices using Linux command. Set-up LAN under Linux.	Multi user OS. Linux Operating system, OS commands. Installing devices. Setting up LAN in Linux environment.	- Do -	- Do -
25	**Project Work**			
26	**Examination**			

TOOLS, MACHINERY, EQUIPMENTS ETC. FOR A BATCH OF 20 TRAINEES for 1ˢᵗ Semester.

Sl. No.	Name of Item	Quantity (Nos.)
1	Basic Analogue Electronics Trainer	5
2	SMPS Trainer	4
3	Insulated Screw Driver (different types)	21
4	Knife double bladed electrician	21
5	Insulated handle thin connector screw driver	21
6	Line tester	21
7	Heavy duty screw driver	21
8	Combination plier	10
9	Long nose plier	21
10	Tweezer	21
11	Phillips type screw driver set	21
12	Wire stripper	21
13	Soldering iron, 20/25watts	21
14	Desoldering pump	21
15	Digital Multimeter-hand held	21
16	Temperature controlled soldering/ desoldering station	05
17	SMD soldering/desoldering station	04
18	Wire gauge set	05
19	Permanent magnet bar	10
20	Solenoid with core	10
21	Electric bell	10
22	Battery storage lead acid 6V & 12 V	05 each
23	Maintenance Free Battery	04
24	Hydrometer	08
25	Battery charger	04
26	Rheostat variable values	08
27	Variable resistance /potentiometer	05
28	DC& AC ammeter 0-50 mA (table model for lab experiments)	05
29	DC& AC ammeter 0-500 mA(table model for lab experiments)	05
30	DC& AC ammeter 0-1mA(table model for lab experiments)	05
31	DC& AC ammeter 0-1 A(table model for lab experiments)	05
32	Analog Multimeter	05
33	LCR meter	05
34	20 MHz Dual Trace Oscilloscope	04
35	Function Generator	04
36	Pulse Generator	04
37	Bread board for connecting various components i.e. diode, resistances, capacitors etc of different dimensions	40

38	Lug boards for circuit wiring	40
39	0-30 V, 2 Amp, Regulated DC Power Supply	21
40	SMPS of PC	10
41	PC Pentium IV or latest configuration (for testing with SMPS)	04
42	UPS 500 VA	04
43	Printer laser (B& W)	01
44	Transformer 0-12 V, 6-0-6 V, 1 Amp	04 each
45	Rubber gloves	10
46	PCB, solder flux etc & electronic components	As required
47	Wires, cables Plug sockets switches of various types and other consumables	As required
48	Resistors, Capacitors, Inductors, Diodes, Transistors, Thyristors, ICs etc.	As required
49	Spare Transformers and power devices required for servicing SMPS	As required
50	Various types of Button Cells	As required

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Instructor table & chair	01 each
2	Suitable Table Teak Wood fitted with Back Panel complete with different types of meters/switches, AC/DC supplies etc. required for testing of electronic circuits. Insulation mats to cover below the table.	As required
3	Revolving Stool cum chair	20
4	Computer Table, Printer Table, Stools	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 10 drawers (standard size) for 20 trainees	02
8	Storage Almirah	As required
9	Book shelf (Glass panel)	01
10	Fire fighting equipment, first aid box etc.	As required
11	Computer Maintenance Tables of Suitable sizes	As required
12	Shoe Rack	As required

Sl. No.	Name of Item	Quantity (Nos.)
	Hardware	
1	Intel Pentium IV @ 2.0 GHz or higher, 512 MB RAM, Intel Motherboard, 40 GB Hard Disk, 17" Monitor, Keyboard, Mouse, 52X CD ROM Drive, 1.44 MB FDD, Multimedia kit, Network Interface Card **or latest configuration**	17 (9 nos. connected in LAN, 8 for Assy & Maint. Practice)
2	ISDN/Broad Band Internet Connection	01
3	20 MHz Dual Trace Oscilloscope	02
4	Digital trainer kit	10
5	Logic Probes/Logic Pulser	10
6	Digital IC tester	04
7	Function Generator	04
8	Pulse Generator	04
9	Digital ICs	As required
10	DC regulated power supply (5 volts and 12 volts)	10
11	Digital Multimeter	10
12	Analog Multimeter	08
13	Digital LCR Meter	03
14	Bread Boards for circuit wiring and testing	20
15	Meggar 500V	02
16	Ammeter (0-10 mA), (0-50mA), (0-100mA) (table model)	02 each
17	Voltmeter (0-1V), (0-10V), (0-30V) (table model)	02 each
18	Different types and makes of Motherboards	10
19	CD Writers	04
20	DVD writer	04
21	External HDD	10
22	Floppy Disk Drive	10
23	CD ROM Drive	10
24	Display card	10
25	Ethernet card	10
26	Computer monitor 15"/17" of different types	04
27	Cabinet with SMPS	10
28	Keyboard and mouse	10 each
29	Thumb drive (latest specification)	10
30	Internal PCI modems of at least four different makes and types	01 each
31	External modems of at least two different makes and types	01 each
32	COMBO drives at least four different makes and types	01 each
33	Dot matrix printer	02
34	Inkjet printer	02

35	Laser printer (B&W)	02
36	Scanner	01
37	UPS 500 VA	21
38	Soldering iron	21
39	De-soldering pump/gun	21
40	Temperature controlled soldering/ desoldering station	04
41	Computer Tool kit for students	21
42	Screw Driver Set - Star/Flat of different sizes	04 each
43	Long Nose Plier	10
44	Combination Plier	05
45	Tweezer	21
46	Wire Stripper	08
47	IC Puller	21
48	Vacuum Cleaner	01
49	Hand blower	01
50	Hand Brush	As required
51	Silicon grease	do
52	Heat sink agent	do
53	RAM 512 MB	do
54	CPU different types	Do
	Software (lincesed version)	
55	Microsoft Window 2000/ XP or latest	01 + 10 licenses
56	MS Office latest version	01 + 10 licenses
57	Anti virus latest version	11

Sl. No.	Name of Item	Quantity (Nos.)
	Hardware	
58	**Computer Server** Intel Pentium IV @ 3.2 GHz or higher, Intel Motherboard, 250 GB Hard Disk, 1.44 MB Floppy Disk Drive, 17" Colour Monitor, MS Mouse, Keyboard, DVD ROM, 2x512 MB RAM, Network Interface Card.	02
59	8/16 port HUB/Switch	04
60	ISDN Line (for Internet)/Cable broadband connection	01
61	Network Interface Card	10
62	Modem (Internal & External)	01 each
63	Switch	01
64	Router	01
65	Crimping tools for network cable	04
66	UTP cable	As required
67	RJ 45 connectors	As required
68	Outlet points / Wall outlets	As required
69	Vacuum cleaner	01
	Software (licensed version)	
70	Microsoft Window 2000 Server or latest	01
71	Network troubleshooting utilities	04
72	Linux Server	01

Raw materials For 1st Semester		
1.	White Board Marker	1 Dozens
2.	Duster Cloth(2' by 2')	20 Pcs
3.	Cleaning Liquid 500 ml	2 Bottles
4.	Xerox Paper (A4)	As required
5.	Full Scape Paper (White)	1 reams
6.	PCB, solder flux etc & electronic components	As required
7.	Wires, cables Plug sockets switches of various types and other consumables	As required
8.	Resistors, Capacitors, Inductors, Diodes, LED, Transistors, Thyristors, ICs etc.	As required
9.	Spare Transformers and power devices required for servicing SMPS	As required

10.	Various types of Button Cells	As required
11.	Dry Cell	As required
12.	Hand Brush	As required
13.	Silicon grease	As required
14.	Heat sink agent	As required
15.	RAM 512 MB	As required
16.	Cartridges for printer	As required
17.	Optical Mouse P/S2 or USB	As required
18.	P/S2 OR USB Key Board	As required
19.	SMPS	As required
20.	CMOS Battery	As required
21.	3 Pin Power Chord	As required
22.	Cat 5/5e/6 cable	300 meters
23.	Flat Cable	100 meters
24.	Stapler Small	2 pcs
25.	Stapler Big	1 pcs
26.	AAA battery for remote	As required
27.	AA battery for clock	As required
28.	8 GB pen drives	4 Nos
29.	CDs	20 Nos
30.	DVDs	10 Nos.
31.	Wall Clock	1 pcs
32.	Anti static pads	As required

33.	Anti static wrist wraps	As required
34.	Soldering wire and paste	As required
35.	RJ – 45 Connector	As required
36.	Telephone cable	As required
37.	Co-axial cable	As required
38.	RJ-11 connector	As required
39.	BNC connector, T connector, terminator	As required
40.	Keystone jack	As required
41.	Patch / Jack Panel	As required
42.	Patch / Mounting cord	As required
43.	RJ-45 Info outlet with faceplate	As required
44.	RJ-45 I/O Box	As required
45.	RJ – 45 Cable extender	As required
46.	8-port HUB	04 Nos.
47.	LAN Card	04 Nos.
48.	Wi-fi LAN Card both PCI and USB	02 Nos.each

Syllabus for the Trade of
"INFORMATION TECHNOLOGY"
Under CoE

Semester – II   *Duration : 6 months*

Week No.	Practical	Theory	Engineering Drawing	W/Cal. & Sc.
1	**Microsoft WORD** Open, resize and close MS WORD. Opening, edit and save/ "save as" documents. Use all menu bar features. Use all Standard tool bar features. Create Document, non-documents files. Create templates. Create tables. Insert pictures and videos. Mail merge documents. Creating Bookmarks. Add Bullets and numbering. Create Hyperlinks. Create broachers. Create book work	**Microsoft WORD** Text editing software's. Introduction to MS Office. Features and application of Microsoft word. Concept of word processing. Menu bar features. Standard tool bar features. Editing the text, use of different tools, formatting the text. Creating, Document, non-documents files. Creating templates. Creating tables. Inserting pictures and videos. Mail merge. Book marks. Bullets and numbering. Hyperlinks. Creating broachers. Creating bookwork	Wiring diagram for small houses	Calculate the voltage gain, current gain and power gain in dB units in single stage emitter following amplifier
2-3	**Microsoft EXCEL** Use Microsoft Excel for creating worksheets with Graphs and Visuals.	**Microsoft EXCEL** Use of Microsoft Excel features for creating worksheets with mathematical formulae and graphs.	Draw the symbols of various electronic components	- Do -
4	**Microsoft POWER POINT** Use features of Microsoft Power point in for creating multimedia presentations with custom animation and effects.	**Microsoft POWER POINT** Use of Microsoft Power point features for creating multimedia presentations.	Draw the circuit diagram of various types of rectifiers, amplifiers, oscillators, power	Problems related to Zener regulator, series regulator and series parallel regulator

			supplies, multivibrators	circuits
5	**Microsoft OUTLOOK:** Customize quick e-mail, calendar, and tasks. Create a shortcut in the Outlook Bar to any file, folder or Web page. Send and receive e-mail in HTML format. Use Find tool to quickly find messages, appointments or tasks using a Web-style search to specify the desired information. Set up rules and even filter out junk e-mail. Publish personal or team calendar as a Web page using a single command. Create and store personal distribution lists along with contacts in your Contacts folder. Manage mass mailings with Mail Merge for e-mail, fax or print distribution to selected or all contacts based on any set of contact fields.	**Microsoft OUTLOOK** Customizable quick e-mail, calendar, and tasks. Create a shortcut in the Outlook Bar to any file, folder or Web page. Send and receive e-mail in HTML format. Find tool to quickly find messages, appointments or tasks using a Web-style search to specify the desired information. Publish personal or team calendar as a Web page using a single command. Create and store personal distribution lists along with contacts in your Contacts folder. Manage mass mailings with Mail Merge for e-mail, fax or print distribution to selected or all contacts based on any set of contact fields. Use the Activities tab on a contact item to dynamically track and view all activity related to a contact such as e-mail, appointments and tasks.	- Do -	- Do -
6-7	**Adobe PageMaker** Use PageMaker features for creating Pamphlets, broachers, reports, illustrative works and long book works.	**Adobe PageMaker** Use of PageMaker features for creating Pamphlets, broachers, reports, illustrative works and long book works.	Draw the circuits of shift registers, counters, digital clock, multiplexer	
8	**Corel Draw** Use	**Corel Draw** Use of	Details of	Find the

	features of Corel draw to create artistic characters and shapes for use with page maker.	features of Corel draw for creating artistic characters and shapes for use with page maker	various TTL and CMOS ICS, RAM, EPROM, A/D Converter, D/A Converter	frequency of oscillation in various oscillator circuits
9	**Internet** Open web pages using URL and domain name. Save web pages. Store web pages as favorites. Use search engines to find sites offering free Email services. Create Email account. Send Email. Copy received Email. Copy/Print received mail. Send Email with attachment. Open/Download attachments. Set-up for Chat. Practice chatting. Practice chatting with Video. Join News group. Getting connected using FTP. Down loading software's. Upgrading Browser versions. Using Telnet to get connected to remote computer.	**Internet** Networking of Computers. LAN, MAN, WAN. Intranet. Inter connected computers. LAN, MAN, WAN. Intranet. Internet, Web sites, WWW, URL. Internet protocols, HTTP, FTP, client end software – Browsers. Requirements for Internet access, browser, modem, ISP. Getting internet account and settings. Types of browsers, basic principle, features. Setting of browser features, security levels. Getting connected to a web site- site name & its URL, Domain name server. Saving web sites, favorites, printing web pages/sites. Meaning and use of Search engines. Searching tips. Web mail account, Email, providers- free and paid. Creating free Email ID, sending and receiving Email. Sending and receiving attachments using Email. Chatting over Web. News groups. Down loading	- Do -	- Do -

		software's –FTP. Getting connected to a distant computer and Telnet.		
10	Using features of OUTLOOK Express for sending and receiving Emails. Setting multiple accounts in outlook express to send/receive mails. Maintaining Address book. **Connecting to Internet** Installing modem in computer. Installing Web Browsers. Setup internet connection using ISP. Setup browser settings.	**MS Outlook Express** Setting-up outlook express for sending and receiving mails using multiple ID's. Features provided by Outlook express.	Detailed block diagram of computer	Problems on conversion of Decimal numbers to binary and Hex
11	**HTML** Working with HTML tags. Working with Fonts, colors, Working with Hyper text Links. Develop Unordered Lists, Develop Ordered Lists. Develop Definition Lists , Write different types of Marquee effects. Develop HTML Pages using Tables. Develop User registration forms. Develop Web pages using Forms (2 pages, 3 pages, Multi pages). Open pages in parent windows. Use Embed tag to insert Media. Insert flash file safe mode. Auto play Videos and Audio files. Play Audio and Video files from	**HTML** Source code of Web pages, meaning of HTML , its features and advantages. Programming using HTML.. Using Scripts for active web pages. Use of Java scripts. (Simple scripts only) Use of VB script for interactive pages. (Simple scripts only) Picture formats, animated files and its usage in web pages. Web page design using Front page. Procedure for Hosting of web sites.	- Do -	- Do -

	specific time. Hide controls on web page. Set different colors to different Headings. Change paragraph font size and color using styles. Print "Hello World" on web page using Jscript. Validate Password given by the user. Validate User input date. Validate E Mail Address. Register free website and upload pages Setting up the work area.			
12-13	**Adobe Photoshop** Practice use of Photoshop tools. Practice use of palettes. Draw & edit with the pencil tools. Smoothen the path with smooth tool. Draw with the Paint tool. Draw curve segments. Use reshape tool. Draw & edit brushed paths. Practice managing brushes. Create brushes. Create a pattern brush. Practice using the brush libraries. Use rulers, guides & grids. Practice use of selection tools. Practice moving, copying and deleting objects. Practice grouping & ungrouping objects. Practice transforming selected objects. Practice distorting with	**Adobe Photoshop** Different composition of colors. The colors of the visual spectrum. Evidence of color theory implementation from existing graphics found in print media. Picture formats. Color use and implementation on the web. Introduction to some of the most common graphics and image file formats, and its restrictions to particular hardware/operating system platforms. Image formats and incorporation of compression technique for large storage size of Image files. Creating Vector Graphics. Using tools for publishing artwork on the Web & in print.	Drawing and component layout of motherboard, display card, Ethernet card, etc.	Addition and subtraction of Binary and Hex, numbers

	free transform tool. Practice Punking & Bloating. Create blends. Practice using the pathfinder palette. Practice working with clipping masks. Practice changing vector Graphics into Bitmap images. Practice linking objects to URLS for Internet packages.	Exploring new creative options and producing high quality images for print & web. Creating exceptional imagery with easier access to file. streamlined web design. Photo re-touching, colorful image collages,		
14	**MULTIMEDIA –Audio** Practice sound Recording in different channels – Mono-stereo. Practice sound editing and giving special effects. Use various formats of sound files. Carryout conversion of analog audio to digital audio. Practice Frequency management. Practice distorting recorded audio using Effects.	**MULTIMEDIA –Audio** Sound recording basics, various formats of sound files, converting analog audio to digital audio. Digital audio editors that include powerful audio processing tools, effects for recording and manipulating audio. Edit files nondestructively down to the sample level with extreme speed and accuracy.	- Do -	- Do -
15-16	**Multimedia –Video** Get acquainted with the arrangement of different Tool Bars, Panels, Tools and View Ports. Draw and visualize simple objects in terms of Top View, Front View and Side View. Create simple objects. Practice Moving, Rotating and Scaling objects. Practice changing dimensions of objects using modifiers, Create different objects	**Multimedia –Video** Introduction to the concept of 3D. Orthographic and Perspective views. Creating basic objects in 3D. Introduction to command panel. Working with "Properties" of 3D objects. Editing 3D objects using modifiers. Elements of View Port controller. Creating objects with Standard Primitives and	- Do -	Problems on Boolean algebra

	using Standard Primitives and Extended Primitives. Make shapes renderable and create splines, Practice manipulation of the shape of the model using Compound Objects. Practice application of Lathe Option for creating symmetrical objects. Apply animation to the models created so far. Practice modelling of real world objects through LPM using Editable Mesh and Editable Poly. Convert a model to an editable mesh and working with Extrude and bevel options.	Extended Primitives. Creating objects using "Shapes" panel. Re-shaping of objects using Compound Objects like Boolean, Terrain and Loft. Creating symmetrical objects using Lathe option. Simple Animation of basic objects. Introduction to Particle Systems. Low Polygon Modelling.		
17	Opening an existing and Creating a new database with MS-ACCESS. Identifying the objects supported MS-ACCESS	Database concepts – data, object and properties: Definition.	Lay out of key board	- Do -
18	Creating table in Data sheet and design view. Enter data and edit data. Data validation and verification in Access	Elements of database in Access : table, form, query, report. Creating tables in Datasheet and design view, setting field properties. Editing data in table	- Do -	Calculation of SI & Compound Interest
19	Develop customized form for data entry.	Developing customized form for data entry and editing. Data validation and verification	Front and Rear view of System Unit of PC, Monitor, FDD, HDD, Modem,	Calculations on pulse duration, pulse width, frequency

			Printers	
20	Develop Queries and generate report for required output.	Developing and generating Queries	- Do -	Percentage gain, profit and loss
21	Generate customized Reports.	Developing ad generating reports	- Do -	Simple calculation of preparation of results, income tax, etc.
22	Setting relationship between tables Setting relationship between tables and queries or both	Relational Database systems. Its advantages and applications Using Multiple table, data entry, and generating reports	Pin diagram of various connectors & cables used in personal computer.	Representation and fractions in different format e.g. experimental format, decimal and percentage formats
23	Practice use of Visual basic with MS Access as front end.	Concept of Front end for database. Software's used as Front-end. Use of Visual basic as front end with access.	- Do -	Conversion and number in bit, byte, kilo byte, mega byte, gega byte, etc.
24	Create a simple application using Access and VB for a given specification. Database back up and retrieval in Access.	Development cycle. Steps for developing simple software using Access and VB for a given application. Database back up and retrieval.	- Do -	Simple calculation of material cost e.g. sheets, wires, battons, papers, cables, etc.
25	**Project Work**			
26	**Examination**			

TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 20 trainees for 2nd Semester

The following items are required for Semester – II in addition to the items listed for the Semester – I.

Sl. No.	Name of Item	Quantity (Nos.)
	Software (only licensed version)	
1	Adobe PageMaker	11 licenses
2	Corel Draw	11 licenses
3	Adobe Photoshop	11 licenses
4	Adobe Premiere	11 licenses
5	Sound Forge	11 licenses
6	3D STUDIO Max	11 licenses
7	Visual Basic	11 licenses

Raw materials for 2nd Semester		
1.	White Board Marker	1 Dozens
2.	Duster Cloth(2' by 2')	20 Pcs
3.	Cleaning Liquid 500 ml	2 Bottles
4.	Xerox Paper (A4)	As required
5.	Full Scape Paper (White)	1 reams
6.	Cartridges for printer	As required
7.	8 GB pen drives	4 Nos
8.	CDs	20 Nos
9.	DVDs	10 Nos.
10.	USB HDD 500 GB	02 Nos.

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Semester – III   *Duration : 6 months*

Week No.	Practical	Theory
1-2	***Linux operating system*** - Installing UNIX / LINUX - Preparing functional system UNIX/LINUX - Adding new users, software, material components - Making back-up copies of the index and files - Dealing with the files and indexes	***Linux operating system*** - Basic Linux commands. - Linux file system, The Shell, Users and file permissions, vi editor, X window system, Filter Commands, Processes, Shell Scripting.
3	***Laptop PCs :*** • Identification of laptop sections and connectors. • Assembling and disassembling a Laptop. • Checking of various parts of a laptop. • Checking of batteries and adaptors. • Replacing different parts of laptops. • Upgrading RAM, HDD and other parts. • Testing, fault finding and troubleshooting techniques. • POST codes and their meaning, fixing of problems based on codes. • Enabling support for SATA technology. Installation of OS using SATA technology drivers. • Laptop troubleshooting • Latest Tools & Gadgets For Desktop/Laptop Repairs	• Introduction of laptop and comparison of various Laptops. • Block diagram of laptop & description of all its sections. • Study of parts of a laptop. • Input system: Touchpad, Trackball, Track point, Docking station, Upgrade memory, hard disk, replacing battery, Configuring wireless internet in a laptop, • Latest Tools & Gadgets For Desktop/Laptop Repairs
4-5	***Printers & Plotters*** a) Testing front panel controls. Interface pins, cables, measurement of voltages and waveforms. b) Installing a printer and carrying	a) Types of printers, Dot Matrix printers laser printer, Ink jet printer, line printer. Block diagram and function of each unit head assembly, carriage, and paper feed mechanism. Front panel controls and

self- test. c) Replacing ribbon in a DMP. d) Refilling ribbon tape of DMP. e) Testing and Rectifying defective cable. f) Removing and cleaning printer head. g) Replacing a new printer head. h) Testing and servicing Printer power supply. i) Changing rollers and other mechanical parts. j) Tracing the control board and identifying defective components. Servicing of control board. k) Replacement of toner cartridge of laser printers. l) Refilling toner cartridge of laser printers. m) Drum cleaning and replacement in of laser printers. n) Testing and servicing Printer power supply of laser printers. o) Changing mechanical parts of laser printers. p) Tracing the control board circuit and identifying defective components. Servicing of control board of laser printers. q) Replacement of ink cartridge of deskjet/inkjet printers. r) Refilling ink cartridge of deskjet/inkjet printers. s) Drum cleaning and replacement in deskjet/inkjet printers.. t) Testing and servicing Printer power supply of deskjet/inkjet printers.. u) Changing mechanical parts of deskjet/inkjet printers.. v) Tracing the control board and identifying defective components. Servicing of control board of deskjet/inkjet printers. w) Connecting and using high speed line printers. x) Replacing spares of line printers.	interfaces. Pin details of interface port. b) Installation of a printer driver. And self test. c) Ribbon types used. d) Refilling of ribbons. e) Printer cable testing defects, effect and servicing. f) Printer head, types, cleaning procedures. g) Precaution to be taken while removing and replacing printer head assembly. h) Pinter power supply, circuit analysis, defects, servicing. i) Carriage motor assembly, paper feed assembly, sensors . Procedure for dismantling and replacing mechanical parts. j) Printer control board, circuit, function, probable defects, servicing. k) Working principle of LASER printer. l) Toner cartridge, types, replacing toner cartridges m) Refilling toner cartridges, equipment available for refilling and procedure. n) Printer drum, function, cleaning and replacing procedure. o) Power supply in laser printers, circuit, defects, servicing. p) Mechanical parts and sensors on laser printer, function, replacement procedure. q) Control board(s) in laser printer, circuit diagram, defects and servicing procedure. r) Working principle of INK JET/Deskjet printers. Type of ink used and replacement of ink cartridge. s) Refilling of ink, equipment available, quality of refilled cartridges. t) Printer drum, function, cleaning and replacing procedure. u) Power supply in inkjet printers, circuit, defects, servicing. v) Mechanical parts and sensors on inkjet printer, function. w) Working principle of Plotter and its common faults.

	y) Self test procedures in printers. Use of diagnostics software for serving printers.	
6	***Scanner & MFD*** Scanner – Installtion, configuration, using Automatic Document Feeder(ADF), OCR. Barcode Scanner – Installation and configuration. Network Scanner – Installation and configuration. Troubleshooting of Scanner. Multifunction Printer – Installation, Replacing supplies and spares, troubleshooting, Passbook Printer – Installation, calibration, configuration & troubleshooting. Replacement of Supplies and maintenance. Network Printer – Installation and configuration, troubleshooting. How to update the flash of Motherboard, printer, scanner and modem etc.	Working principles of Scanner, Barcode Scanner, Network Scanner. Working principles of Multifunction Printer, Passbook printer, High Speed Printer, Line Printer, Network Printer. Print Server.
7	***Monitor, display card and driver.*** a) Identify the type of monitor connected to PC. Specifications, front panel controls and settings. b) Identify the specifications of the display driver card installed in the PC. c) Remove the display driver card and identify the main components and connectors on the display driver card. d) Replace the display driver card and re-install. (before practicing this skill set, the already installed driver should be removed from device manager) e) Change the exiting display card with a different card given and install. f) Servicing of monitors, changing fuses, adjusting colors, brightness and contrast. Setting resolution, loading drivers. Checking and replacing components on the PCB.	a) Types of monitor, Monochrome and colour, CGA, EGA, VGA, SVGA, Digital Analogue, interlaced non interlaced. Specifications and comparison of Monitors. Front panel controls brightness, contrast, horizontal and vertical height settings. b) Display cards, bus standards, types CGA, EGA VGA, SVGA, AGP , memory and drivers. Main components and connectors on display cards, display controller IC, RAM chips and dual port feature principle of working and use of display memory. Installing display drivers, setting features. e) Information required before changing the display driver card and precautions to be taken while installing a display driver card. LCD and TFT Monitors. Understanding the difference between flat screens and CRT display systems Understanding the displays memory and its effect on quality and performance. Working principle of LCD Projector, its

	Checking and adjusting LCD Monitors. g) Install, configure and operate LCD Projector. h) Install and Configure Touch Pad.	specification, configuration and common faults. Working Principle of Touch Pad.
8-9	***Upgrading of System*** :- Mother board, Memory, CPU, Graphic Card, BIOS upgradation, Additional features, Updating of System Software & Application Software (Requirement & How to update) ***Practice on Back up Drives:*** Pen Drive U3 format, Zip Drive, Tape Drive, USB External Drive (HDD, CD/DVD writer), Types, capacity, interface connector, write protection, Trouble Shooting, Interface, Installation, casing for external drive.	Understand the limitation of a PC and scope for upgrading. Understand technical specifications for PC upgrading. a) Introduction to removable storage devices, Bulk data storage devices-magnetic, optical, magneto optical drives, WORM drives. b) Minor repairs and maintenance of CD ROM drives. c) Technology, working principle, capacity, media of ZIP drives. d) Important parts and functions of a ZIP drive. e) Minor repairs and maintenance of ZIP drive. f) Important parts and functions of DAT drive. g) Minor repairs and maintenance of DAT drive. h) Important parts and functions of DVD ROM drive. i) Minor repair works on a DVD ROM drive. j) Minor repair works on a CD WRITER. k) Technology, working principle, capacity, media of Magneto- Optical Disk (MOD) drives. Applications. l) Important parts and functions of MOD drive. m) Minor repair works on MOD. n) Latest trends in backup devices / media.
10-11	***Maintenance and Troubleshooting of PC.*** a) Running diagnostics program to identify the health and defects of a PC. Check system performance using	a) Safety precautions in handling PC, sub assemblies and components, Important points to be considered while purchasing and replacing components. Concept of Preventive and corrective maintenance.

third party utilities. Use benchmarking utilities to benchmark systems. b) Identify the defect in PC from the audible and observable symptoms such as beep sounds, post messages. hanged keyboard, erratic display etc., and corrective action. c) Tracing the circuit of a KB. d) Trouble shooting defects related to Keyboard and its related ports ports loose connections, replacing cable, replacing keys (DIN,PS/2,USB). e) Trouble shooting defects related to Mouse and its related ports loose connections, replacing cable, replacing roller and sensing elements. (COM,PS/2,USB). f) Study of interface cable connector, replacing of subassemblies of Light pen, scanner, digitizer g) Trouble shooting defects related to HDD,(practice of replacing motor, head, PCB among faulty drives) cable and connector. h) Trouble shooting defects related to CD ROM Drive, Attempting for replacement and adjustments) cable and connector. i) Trouble shooting defects related Ports to Jumper setting. j) Trouble shooting defects related to Processor. k) Trouble shooting defects related to RAM memory modules. l) Trouble shooting defects related BIOS. m) Trouble shooting defects related to CMOS setup. n) Trouble shooting defects related to	Tools required, Active & Passive Maintenance, Maintenance scheduling. Need of diagnostics program. Features, limitations. Examples of commonly used diagnostic programs. b) Probable defects in PC. Localizing faults through its observable visual or audio symptoms and possible methods for rectification /servicing. Understanding serviceability of component. Economy in repair/replacement. c) Block diagram of a KB, function of controller, LED driver Sample circuit d) Defects related to Keyboard and its related ports(DIN,PS/2,USB) Discontinuity in cable, and bad keys. Servicing procedure. e) Defects related to Mouse and its related ports(COM,PS/2,USB) and servicing procedure. f) Working principle, electro mechanical circuits of Light pen scanner and digitizer. g) Defects and symptoms related to HDD and its cable, connector and servicing procedure. h) Defects related to CD ROM Drive jamming of mechanical assembly mal function of control circuit. and its cable, connector and servicing procedure. i) Defects related to Ports jumper setting on mother board and servicing procedure. j) Defects related to processor, its socket, cooling and servicing procedure k) Defects related to RAM memory module connector and servicing procedure. l) Defects related to BIOS, upgrading and servicing procedure. m) Defects related to CMOS, COMS setup and servicing procedure. n) Defects related to battery and servicing procedure.

	Battery.	
12	***Tablet / Smart Devices*** • Assembling & disassembling of different types of tablets / Smart Devices. • Testing of various parts with multimeter. • Replacing of faulty parts. • Fault finding & troubleshooting. • Practice Advanced troubleshooting techniques. • Flashing of various brands of tablets / smart devices. • Upgrading operating systems. • Formatting of virus affected devices. • Unlocking of handsets through codes and software. • Troubleshooting settings faults. • Working with iOS, Android, Icecream sandwich, Jellybeans. • Installation of PhoneGap framework.	• Circuit Board / Motherboard Introduction. • Study of parts of a tablet PC / smart devices. • Testing of various parts with multimeter. • Steps of repairing various hardware problems. • Advanced troubleshooting techniques. • Introduction of various software faults. • Flashing of various brands of tablets / smart devices. • Upgrading operating systems. • Locking & Unlocking of handsets. • Concept of iOS, Android, Icecream sandwich, jellybeans. • Concept of PhoneGap.
13	***Configuration of Data communication equipments.*** Connecting computers with Network with Drop cable and using Wi Fi configuration. Basic Programmable switch Configuration Spanning Tree Protocol (STP) Command Line Interface IP Routing Process Verifying Configuration	Network Components – Modems, Firewall, Hubs, Bridges, Routers, Gateways, Repeaters, Transceivers, Switches, Access point, etc. – their types, functions, advantages and applications. IP Routing in Network RIP IGRP
14	***Network Protection and troubleshooting.*** Setting up basic protection using public keys and MAC address filters. Integrate wired with wireless network. Power over Ethernet(PoE). Troubleshooting wired and wireless network.	Collaborating using wired and wireless networks, Protecting a Network, Network performance study and enhancement.

15-16	***Server Installation & Basic Configuration.*** Identify Server Hardware Install and configure Windows Server Install and Configure Active Directory, Implementing AD Services. Configuration of broadband modem and sharing internet connection.	Server concepts, Server Hardware, Installation steps, configuration of server. Concept of Active Directory. ADS Overview, ADS Database, Active Directory Namespace, Logical & Physical Elements of AD.
17	***Install & configure DNS*** Installing and Configuring DNS Services - Setup Name resolution – Host names, NetBIOS names - Installing DNS Server - Configuring DNS Zones, DNS Clients, Delegating Zones - Testing DNS with nslookup, dnscmd and dnslint Installing and Configuring DHCP Services - DHCP Server Configuration - Setting up of DHCP, Routing and remote access.	Concept of DNS. Name resolution – Host names, NetBIOS names. DNS Overview. DHCP Overview DHCP Clients and Leases
18	***Routing and Remote Access*** - Configuring RRAS - VPN implementation - Configuring Remote Access Authentication Protocol - Configuring RRAS Policies - Configuring IAS - Managing TCP/IP Routing	Remote Access Overview VPN Concepts. Remote Access Authentication Protocol RRAS Policies IAS TCP/IP Routing
19	***Planning and Implementing User and Group Strategies*** - Adding Account - Implement AGDLP Process - Implement User Authentication Strategy - Planning and Implementing OU Structure Planning and Maintaining Group Policies - Configuring User Environment - Configuring Computer Security	Concept of User and Group. Planning Security Group Strategy AGDLP Process Planning User Authentication Strategy Planning OU Structure Planning a Group Policy Strategy Deploying Software Through GPO
20	***Server Configuration & Backup*** Configure a server as web server Configuring Mailbox Servers Implementing Backup and Recovery	Introduction to Web Server Introduction to Messaging Services Concept of Backup and Recovery of Server.

21	**_Managing Server Network Security_**	Security Baseline and Templates
	- Security Baseline Settings and Templates	Audit Policy
	- Configuring Audit Policy	Understanding IPSec
	- Monitoring and Troubleshoot Network protocol	Protocol Security
	- Configuring Protocol Security	Planning security for Wireless Network
	- Planning security for Wireless Network	
22	**_Maintaining Network Infrastructure_**	Managing Network Traffic
	- Monitor Network Traffic	Types of Problems of Internet Connectivity
	- Troubleshoot Internet Connectivity	Types and working of Server Services.
	- Troubleshoot Server Services	
	- Use Linux Network Tools to check / maintain / Manage Network.	
23	**_Linux Server installation and configuration_**	Linux Server installation and configuration
	- Install Linux Server	- Configuration Plan
	- Create new user and group	- Public and data directory
	- Create public and data directory	- Host file
	- Create an lmlhosts file	- SWAT
	- Check host file	- Password Authentication
	- Secure and run SWAT	- Telnet
	- Filter ports	
	- Telnet installation and configuration	
24	**_Network Security_**	**_Network Security_**
	Practice on firewall technologies to secure the network perimeter.	Modern Network Security Threats and the basics of securing a network.
	Practice LAN security considerations and implement endpoint and Layer 2 security features.	Secure Administrative Access, LAN security considerations.
	Wi-fi configuration to implement security considerations.	Network Security Devices.
		Cryptography.
		Wi-fi security considerations.
25	**_Project Work (any one)_**	
	Troubleshoot / Repair / Replace a faulty Printer / Scanner / UPS / MFD / VDU / Add-on card /Spares, Installation & configuration of LINUX, Configure Outlook, Setting / Configuring Tablet / Android etc.	
	Setting up a LAN of at least 3 PCs using HUB / Switch and structured cabling, Configuration of Switch / Router, Setup a wireless LAN with security features, Invoking Network security, Installation & configuration windows server, Installation & configuration of LINUX Server etc.	
26	**EXAMINATION**	

LIST OF TOOLS AND EQUIPMENT

The following items are required for Semester – III in addition to the items listed for the Semester – I & II.

A. TRAINEES TOOL KIT FOR 20 TRAINEES +1 INSTRUCTOR

Sl.No	Specification	Quantity
1	Connecting screwdriver 100 mm	21 nos.
2	Neon tester 500 V.	21 nos.
3	Screw driver set (set of 5)	21 nos.
4	Insulated combination pliers 150 mm	21 nos.
5	Insulated side cutting pliers 150 mm	21 nos.
6	Long nose pliers 150 mm	21 nos.
7	Soldering iron 25 W. 240 V.	21 nos.
8	Electrician knife	21 nos.
9	Tweezers 100mm	21 nos.
10	Soldering Iron Changeable bits 15 W	21 nos.

B. LIST OF TOOLS REQUIRED

Sl.No	Specification	Quantity
1.	Crimping tool (pliers)	2 Nos.
2.	Magneto spanner set	2 Nos.
3.	Screw driver 150mm	4 Nos.
4.	Steel rule 150mm	2 Nos.
5.	Scriber straight 150mm	2 Nos.
6.	Soldering Iron 240W	1 Nos.
7.	Allen key set (set of 9)	2 Nos.
8.	Tubular box spanner (set of 6nos)	1 No
9.	Magnifying lenses 75mm	3 Nos.
10.	Continuity tester	6 Nos.
11.	Soldering iron 10W	6 Nos.
12.	Cold chisel 20mm	1 No.
13.	Scissors 200mm	1 No.
14.	Handsaw 450mm	1 No.

B. Tools & Equipments

Tools and Equipment: (Computer Hardware: Installation and Maintenance)		
Sl. No.	Name of the Equipment	Qty
HARDWARE		
1.	Laptop, Notebook	01 each
2.	Intel Mobile Desktop based PC with LCD monitor	01 no
3.	Tablet	04 Nos.
4.	Printers: Laserjet, deskjet, passbook, mfd	01 each
5.	Network Printer	01 no
6.	5KVA online UPS	02 nos

7.	LAN Cards, Wi-fi LAN Cards	06 nos each.
8.	LCD/DLP Projector	01 no
9.	Power Meter	02 nos
10.	Crimping Tools	06 nos
11.	Computer Toolkits	06 Nos.
12.	Computer Spares:	As required
13.	Motherboards (of different make)	4 nos
14.	Cabinets	4 nos
15.	Processors (of different make)	4 nos
16.	Hard Disk (500 GB or better) different types	4 nos
17.	Optical Drives	4 nos
18.	LCD/LED/TFT Monitors	2 nos
19.	Pen Drives	4 nos
20.	External Hard disk	2 nos
21.	External DVD Writer	2 nos
22.	Keyboards	4 nos
23.	Mouse	4 nos
24.	Anti static pads	4 nos
25.	SMPS	4 nos
26.	Digital Multimeters	10 nos
27.	Blu-Ray drive and player	2 nos
28.	External Hard Disk	2 nos
29.	Digital Camera	2 nos
30.	HD Display	2 nos
31.	Network storage	2 nos
32.	Card Reader	2 nos
33.	Game video card	2 nos
34.	Web Cam	2 nos
35.	Surround sound speakers	2 nos
36.	Different types of memory cards	2 nos each
37.	Laptop kits	12 nos
38.	Laptop spares: Cabinet with display, memory, hard disk, battery pack, keyboard membrane, chargers	As required
39.	SMPS Trainer kit	2 nos
40.	UPS Trainer kit	2 nos
41.	Power electronics Trainer kit	2 nos
42.	Post error debugging card	4 Nos
43.	SMPS Tester	4 Nos.
44.	PCI slot Testing tool	4 Nos.

SOFTWARE		
1	Network Management Software	01 No.
2	Data recovery software	2 nos
3	LINUX Server Operating System (Samba / Su-se)	01 No.
4	Open source Pc Utility / Tweak Software	As availabe

FURNITURE and Other Equipments		
1.	Printer Table	1 No
2.	Air conditioners (optional)	2 Nos
3.	Scanner	1 No
4.	Multifunction Printer	1 No

5.	ADSL Modem for Broadband connection	1 no
6.	Telephone Line	1 no
7.	Broadband Internet connection	1 no
8.	Fire fighting equipments	As required
9.	Hardware and Network Trainer Kit	6 nos

C.Tools & Equipments

(Computer Networking)		
SI. No.	Name of the Equipment	Qty
HARDWARE		
1.	Wireless Network Adapter	6 nos
2.	Wireless Access Point	4 nos
3.	Router	4 nos
4.	Managed Layer 2 Ethernet Switch 8/16/24 port	2 nos
5.	Managed Layer 3 Ethernet Switch 8/16/24 port	2 nos
6.	Network Training System	2 nos
7.	LAN Protocol Simulation and Analyser Software	2 nos
8.	Network and Internet security trainer	2 nos
9.	LAN cable tester	2 nos
10.	Network cables – UTP	As required
11.	Network Cables – coaxial, flat, ribbon	As required
12.	LAN Cards, wi-fi LAN Card	05 nos each
13.	Connectors for cables	As required
14.	Power Meter	2 nos
15.	Media Convertor	4 each
16.	8/16/24 port UTP jack panel	2 nos
17.	SC Couplers	12 nos
18.	SC Pigtails	12 nos
19.	Fluke Meter	2 nos
20.	Crimping Tools	6 nos
21.	Switch with POE ports	2 nos
22.	POE adapters	2 nos
23.	Network Camera (Outdoor / Indoor)	2 no. each
24.	Fibre Optics cable with LC connector	As required
25.	LC connector module	As required.
26.		

Raw materials for 3rd Semester		
1.	White Board Marker	1 Dozens
2.	Duster Cloth(2' by 2')	20 Pcs
3.	Cleaning Liquid 500 ml	2 Bottles

4.	Xerox Paper (A4)	As required
5.	Full Scape Paper (White)	1 reams
6.	Hand Brush	As required
7.	Heat sink agent	As required
8.	RAM 512 MB	As required
9.	Cartridges for printer	As required
10.	Optical Mouse P/S2 or USB	As required
11.	P/S2 OR USB Key Board	As required
12.	SMPS	As required
13.	CMOS Battery	As required
14.	3 Pin Power Chord	As required
15.	Cat 5/5e/6 cable	300 meters
16.	Flat Cable	100 meters
17.	8 GB pen drives	4 Nos
18.	CDs	20 Nos
19.	DVDs	10 Nos.
20.	Soldering wire and paste	As required
21.	RJ – 45 Connector	As required
22.	Telephone cable	As required
23.	Co-axial cable	As required
24.	Keystone jack	As required
25.	Patch / Jack Panel	As required
26.	Patch / Mounting cord	As required

27.	RJ-45 Info outlet with faceplate	As required
28.	RJ-45 I/O Box	As required
29.	RJ – 45 Cable extender	As required

Syllabus for the Trade of
"INFORMATION TECHNOLOGY"
Under CoE

Semester – IV   *Duration : 6 months*

Week No.	Practical	Theory
1-2	***Raster & Vector Graphics:*** Tools to be Used : Adobe Illustrator Drawing 1 Fundamental techniques of drawing in pencil, charcoal and ink. Emphasis is on realistic representation and visual observation. Drawing 2 Advanced concept of drawing. Emphasis is on design and composition and experimental techniques in different media · Creating area text · Applying basic character settings · Applying basic paragraph settings · Creating text threads · Creating text on a path · Converting text to outlines Use of selection Tool · Using the basic selection tools · Using the Magic Wand and the Lasso tool · Selecting objects by attribute · Saving and reusing selections Appearances Targeting objects attributes · Adding multiple attributes · Applying live effects · Expanding appearances · Creating graphic styles Modifying graphic styles · Appearance palette settings · Copying appearance Working with Groups and Layers · Defining groups · Editing groups · Working with Layers · Layers and object hierarchy	Graphics Editing Traditional Design Traditional and digital applications of color, concept and composition. Drawing 1 Drawing 2 Making Selections Understanding Appearances Working with Groups and Layers Advanced Drawing and Path Editing Working with Color Object Transformation and Positioning Use of Brushes Use of Masks Use of Symbols Application of Filters and Live Effects Advanced Test Editing Designing for the Web Creation of Blends Working with Images Performing Specialized Tasks Saving and printing Working with Other programs

· Creating template layers · Object, group, and layer attributes Advanced Drawing and Editing Path · Creating Live Paint groups · Detecting gaps in Live Paint groups · Path editing with Live Paint · Using Offset Path · Dividing an object into a grid · Cleaning up errant paths Working with Color · Defining swatches · Creating swatch groups and libraries · Working with gradients · Working with patterns · Using the Color Guide · Experimenting with color · Finding colors with kuler · Modifying color in artwork Transformation and Positioning · Rotating and scaling objects · Reflecting and skewing objects · Using the free Transform panel · Aligning objects Distributing objects Using Brushes · Creating a calligraphic brush · Creating a scatter brush · Creating an art brush · Creating a pattern brush Working with Masks · Understanding clipping masks · Using layer clipping masks · Creating opacity masks Using Symbols · Defining symbols · Editing symbols · Using the symbolism toolset Applying Filters and Live Effects · Minding your resolution settings · Mapping artwork to 3Dobjects · Using the Transform effect Using the pathfinder effects · Using the Stylize effect · Using the Scribble effect · Using the Warp effect Advanced Text Editing · Taking advantage of Open type	

		fonts	
		· Using the Glyphs panel	
		· Wrapping text around objects	
		· Checking spelling	
		· Using the change cash function	
		· Setting tabs and leaders	
		· Managing fonts	
		· Dealing with legacy text	
		Web Designing	
		· Using pixel preview	
		· Specifying web slicing	
		· Optimizing web graphics	
		· Creating simple animations	
		Creating Blends	
		· Creating a basic blend	
		· Using a blend to create an airbrush effect	
		· Using a blend to create an animation	
		· Using a blend to evenly distribute	
		Working with Images	
		· Placing images	
		· Using the Links panel	
		· The Edit Original workflow	
		· Live Trace	
		· Rasterizing artwork	
		· Object mosaic Creating graphs	
		· Creating a lens flare	
		· Using gradient Mesh	
		· Using Envelope Warps	
		· Using the Liquefy distortion tools	
		· Saving your Graphics Editing Tool Document	
		· Printing your Graphics Editing Tool Document	
		· Using the Crop Area tools	
		· Setting up page tiling	
		Adding XMP metadata	
		Exporting programs	
		· Exporting files for use in QuarkXPress	
		Exporting files for use in In Design	
		· Exporting files for use in Word/excel/PowerPoint	
		· Exporting files for use in image Editing Tool	

		· Exporting files for use in Authoring Tool · Exporting files for use in Special effects Tool · Effects (Ps-Ai) · Preferences	
3-4	***Introduction to Flash*** Practice on Tool Features, User interface, Image Editing Tool and Graphics, Editing Tool integration, Authoring Tool Video Technology, UI components Practice on Creating and Importing Graphics Assets, Working with different graphic Practice on formats - Importing bitmap graphics, Working with layers and layer folder, Using the drawing tools, Using object and merge drawing, Working with the color panels, Creating and using Graphic symbols, Using the Library panel Practice on Text Effectively- Text tool, Adding and formatting static text, Changing font rendering methods, Adding input text fields, Embedding fonts in input text fields, Using for best practices Practice on Creation of Animations - Working with the timeline, Using key frames, blanks key frames and frames, Creating motion tweens, Creating shape tweens, Creating transition effects, Using animation best practices Practice on Basic Action Script - Using Script Assist, Adding actions to a frame, Creating and using Button symbols	Introduction to Flash About Flash and General overview – Stage and Work area of Flash, using guides, grid & rulers. Using frames and key frames, Working with time line. Using layers – to create a layer, to create a layer folder, to show or hide a layer or folder, to view the contents of the layer as outlines, to change the layer height in the timeline, to change the order of the layers or folders. Using Guide layers. Drawing in Flash – to raw with a pencil tool, to paint with a brush tool, to draw with pen tool. Using colors in Flash, to use a gradient fill. Importing Artwork, Video and Audio. Different file formats in Video & Audio. Flash Compatible Audio & Video file formats	
5-6	***Video Editing:*** **Tools to be Used : Adobe Premier** Project settings · Preference settings · Asset Management · Sequences & Clips · Offline On-line Clips Managing Clips · The Project panel · Views	Introduction to Adobe Premier Project Creating a Sequence Editing in the Timeline Refining the sequence Transitions Audio Tiles Effects Output	

· The preview area · Organizing clips and bins · Duplicating and copying clips · Renaming clips · Finding clips(search function) · Interpreting Footage · Unlinking and Re-linking Media · The Project Manager The Monitor Panels · Viewing Clips · Playback Controls · Audio Clips · Cuing Clips · Time Ruler Controls · Safe Zones · Display Mode · Wave form and Vectorscope Options · The Reference Monitor · Ganging source and Program Monitor Creating a Sequence · Editing Methods · In And Out Points · Sub Clips · Source And Target Tracks · Overlay And Insert Edits · Adding Clips By Dragging · 3 And 4 Point Edits · Lift And Extract · Storyboard Editing · Multiple And Nested Sequences Editing in the Timeline · The Time Ruler · Adding, Deleting and Renaming Tracks · Markers · Selecting · Splitting Clips · Speed, Duration and Reverse · Multicam Editing · Synchronizing Clips · Replace Clips Refining the sequence · Snapping · Trimming Methods · Trimming Clips	

	· Ripple , Roll, Slip And Slide Edits · The Trim Panel · Split Edits (L And J Cuts) Transitions · The Effects Panel · Understanding Transitions · Applying A Transitions · Editing A Transitions Audio · The audio mixer · Recording with the audio mixer · Fading panning and balancing · Effects · Corrective measures · Routing tracks Titles · Creating a title · Text paths · Roll and crawl titles · Text configuration Effects · Effect Types · Effect Properties · The Effects Control Panel · Key framing · Motion Effects · Opacity and Volume · Lighting Effects · Timewarp (pixel motion Blending) · Special effect Tool and Premiere Output · Creating DVDs · Blu-Ray · SWF and FLV Files Media Encoder · DVD Makers · Using Clip Notes	
7-8	**Introduction to Adobe After Effects** Practice on User interface Creating and using compositions Practice on Key framing and using time line Practice on Looping animation Practice on Editing motion path Creating the arrivals Bound Effects Simulation between Authoring Tool & Special effects Tool	Introduction to Adobe After Effects Special effect Techniques Introduction User interface Creating and using compositions Key framing and using time line Looping animation Editing motion path Creating the arrivals Bound Effects Simulation between Authoring Tool &

	Applying filter effects and mask to components Practice on Animate 3D transformations Include a common loop sound Practice on simple scripting in special effect Tool Rotoscoping, Chroma, 2D & 3D tracing, Green/Blue screen technique/shooting. Colour Correction	Special effects Tool Applying filter effects and mask to components Animate 3D transformations Include a common loop sound Use of simple scripting in special effect Tool Rotoscoping, Chroma, 2D & 3D tracing, Green/Blue screen technique/shooting. Colour Correction
9-10	**Introduction to 3ds MAX** Practice on creating projects and scenes Practice on Transform tool basics, Pivot points, Grouping and parenting, Modeling with primitives Practice on User Interface - Setting up project, Views/panels, Hotbox, Viewing Geometry, Channel Box, Layer Box, Attributes Editor, QWERTY Navigation, Working with the camera, Over view of MEL, Outliner/ Hyper graph, Grouping / parenting Shelf Marking Menus Practice on Modeling – Curve Tools/snapping, Revolving, History, Duplicating, Working with NURBS, Detaching surfaces, Grouping/Duplicating, Working with polygons, Subdivisional surfaces, Split polygon Tool, Lofting, Extruding Practice on MODELING Practice on POLYGON TOOLS Practice on WITH PROXY Practice on NORMALS, Lighting /Rendering Practice on Hyper shade, Materials, Apply Materials, Making Shader Networks, Combining Ramps, Layered Textures, Intro to lights, Making Bump Maps, Working with Shadows, UV Mapping, Specular Maps, Paints FX, Render View, Camera Settings, Render Globals, TOON SHADER	Introduction to 3ds Max 3D Animation Techniques Fundamentals & concepts User Interface Modeling Lighting /Rending Character Setup & Animation Dynamics
11-12	Introduction to Front Page	Introduction to Front Page Background Pictures

	Creating Background Pictures Creating Tables - Adding and Deleting Rows, Columns, and Cells Background Colors Practicing Picture Manipulation - Transparent, Alt Representation Text Tags, Rotating, Thumbnails, Picture Gallery Practicing Hyperlinks - To 'Outside'/External Sites, Internal Link, Bookmark, Email Addresses, Rollover Styles, Target Frames Practice on Marquees Practice on Forms - Search Page, Inserting a Form, One Line Text Box, Option Button, Check Box, Text Area, Drop Down Box, Confirmation Pages Practice on Sample Forms Page, Date and Time Stamp, Counter, Page Transitions, Changing your Password Practice on - Themes, Banners, Buttons, Headings, Hyperlinks/Bullets/Horizontal Lines, Navigation Bars Practice on creating Frames, Shared Borders Practice on Scheduling a Web Page or Picture to Appear	Tables - Adding and Deleting Rows, Columns, and Cells Background Colors Picture Manipulation - Transparent, Alt Representation Text Tags, Rotating, Thumbnails, Picture Gallery Hyperlinks - To 'Outside'/External Sites, Internal Link, Bookmark, Email Addresses, Rollover Styles, Target Frames Marquees Forms - Search Page, Inserting a Form, One Line Text Box, Option Button, Check Box, Text Area, Drop Down Box, Confirmation Pages Sample Forms Page, Date and Time Stamp, Counter, Page Transitions, Changing your Password Themes, Banners, Buttons, Headings, Hyperlinks/Bullets/Horizontal Lines, Navigation Bars Frames, Shared Borders Scheduling a Web Page or Picture to Appear
13-14	**VBScript, Java Script**. ***VBScript*** – Practice on Embedding VBScript in HTML, VBScript to Display Information, Hiding VBScript from Older Browsers, Code Documentation & Formatting, Declaring Variables, Naming Variables, Variants & Subtypes, Assigning Values to Variables, Determining Variant Subtype, Data Subtype Conversion, Numeric & Literal Constants, One-Dimensional Arrays, Multi-Dimensional Arrays, VBScript Operators, Arithmetic Operator Precedence, Comparison Operators, Logic Operators, String Concatenation, Procedures, Subroutine Procedures, Scope of Variables, Function Procedures, Randomize & RND, Control Statements, Four Control Structures,	**Programming Language Basics** – Introduction to computer programming language, Generations of Programming Languages, Procedural & non-procedural programming Language, Structured & Object Oriented Programming Language, Algorithm, Flowchart. Introduction to Scripting Language, difference between programming and scripting languages, working principle of Scripting language. ***Vbscript*** - Embedding VBScript in HTML , VBScript to Display Information, Hiding VBScript from Older Browsers, Code Documentation & Formatting, Variables, subtypes & Constants, Arrays, VBScript Operators, VBScript Procedures, Program Control & Structure, Strings & Numbers, Message & Input Boxes, Dates & Times,

		Using Loops, Topic title, Strings, Formatting Numbers, Message & Input Boxes, Dates & Times, Splitting Up Dates & Times, Page Updates. The Document Object Model(DOM) – Properties, Methods, Events & Collections, Event Handlers – Top-Down & Event-Driven Programming, Mouse Events, Keyboard Events, Validation & Error Handling. Platform or Host dependence. *JAVA Script* – Practice using Java Script in an HTML Document, Hiding Java Script from old Web Browsers, **Basic Syntax Used in Java Script Commands, Variables** - Assigning Values to Variables, Concatenating String Variables**, Functions**- Creating & Calling Functions, Sending Parameters to a Function, Receiving Parameters out of a function, Variable scope & Lifetime, Functions Called by Events**, Flow Control Structures** - If Structure, If Else Structure, For Loop, While Loop, For/in Structure**, Operators** - Unary Operators, Numeric Operators, Logical Operators**, String Processing** - Length, Converting to all Upper or Lower Case, Index of, Last Index of, Char At, Substr**, Objects** - Creating an Object, Adding Functions to an Object, Multiple Instances of an Object type**, History Object** - Accessing the History Object, Creating Buttons, History.Go Method**, Date Object** - Creating a Date Object, Setting the Date & Time by a Single String, Separating Variables with Commas, Displaying the Date & Time, Time Zones, Extracting the Date, Extracting the Hrs, Set Date Method, Set Time**, Non-Data Object Functions, Using Objects like Arrays** - Creating an Array, For Loop**, Events** - Time Status, Buttons**.**	The Document Object Model(DOM) – What Does VBScript Manipulate? History & Background of the DOM, Properties, Methods, Events & Collections, Internet Explorer 5.x DOM, Event Handlers – Top-Down vs. Event-Driven Programming, Mouse Events, Keyboard Events, Validation & Error Handling. VBScript & the Web – Platform or Host dependence. *JAVA Script* – Introduction to Java Script, Where does Java Script Fit in? Comparing Java Script to VBScript, Comparing Java Script to Java, The Purpose of Java Script, Prerequisites, Using Java Script in an HTML Document, Hiding Java Script from old Web Browsers, **Basic Syntax Used in Java Script Commands, Variables, Functions, Flow Control Structures, Operators, String Processing, Objects, History Object, Date Object, Using Objects like Arrays, Events.**
15-17		**PHP (Hyper Text Pre Processor)** Installation of Apache Web Server Practice simple PHP programs. Practicing on programming to test	Introduction to PHP, its features and advantages. Basic PHP Syntax, tags, Data types, Constants and Variables, Operators and

| | | events
Practicing the if statement
Using the else clause with if statement
Practicing The switch statement
Using the ? operator
Practicing the while statement
Practice on do while statement
Practice on for statement
Breaking out of loops
Practicing on Nesting loops
Practicing on Functions and returning value from function
Practicing user defined functions
Practice on dynamic functions, variable scope
Practice on accessing variable with the global statement
Practice on Function calls with the static statement
Practice on Setting default values for arguments
Practice on Passing arguments to a function by value
Practice on Passing arguments to a function by reference
Testing for function existence
Practicing the Writing to the browser
Practice on Getting input from forms
Practice on Output buffering
Practice on Session handling
Practice on Regular expression
Practice on Common math
Practice on Random numbers
Practice on File upload
Practice on File download
Practice on Environment variables
Practice on E-mail in PHP
Practice on The anatomy of a cookie
Practice on Setting a cookie with PHP
Practice on Deleting a cookie
Practice on Creating session cookie
Practice on Working with the query string
Practice on Creating query string
Practice on Starting a session
Practice on Working with session variables | expressions.
 PHP Conditional Events, Flow control and looping in PHP
Functions in PHP
Arrays and Strings in PHP
Super Global Variables in PHP. Form handling and validations |

		Practice on Destroying session Practice on Passing session IDs Practice on Encoding and decoding session variables Practice on Creating and deleting a file Practice on Reading and writing text files Practice on Working with directories in PHP Checking for existence of file Determining file size Opening a file for writing, reading, or appending Writing Data to the file Reading characters **Working With Forms** Forms Super global variables The server array A script to acquire user input Importing user input Accessing user input Combine HTML and PHP code Using hidden fields Redirecting the user File upload and scripts **Working With Regular Expressions** The basic regular expressions PCRE Matching patterns Finding matches Replace patterns Modifiers Breakup Strings **Classes And Objects** Objects oriented programming Define a class An Object Creating an object Object properties Object methods Object constructors and destructors Class constants Class inheritance Abstract classes and methods Object serialization Checking for class and method	

	existence Exceptions Iterators	
18-19	**My SQL** **Installation of MySQL** Installation of MySQL Configuration of MySql Server Client architecture Practice on Table Creation Rules Practice on MySQL syntac and creating database design Practice on data migration Importing and exporting formats Practice on data tunneling Practice on Database repair and archival Practice on cross database syntax equivalents. Preparation of Database Project in any Industry/organization	**My SQL** *The SQL Create Command* Table Creation Rules: Dropping a Table: The SQL-INSERT Command: Inserting NULL Viewing data (SQL-SELECT): Updating Data in a table (The SQL-UPDATE command): Deleting rows of data (The SQL-DELETE command): Viewing the structure of an already existing table (SQL-DESCRIBE command): MySQL Scripting
20-21	**Web Page Design and Publishing in a local server / local web server** Create a Web page using HTML, CSS, VB Script and Java Script. By installing and configuring IIS convert your windows PC into web server, Install any open source web server like Apache / Wamp. Publish / Host website in the local web server. **Blog Creation** Create a blog in free blogging service like blogspot.com, www.blogger.com, wordpress etc., add themes. Maintaining Blog.	**Web Page Design and Publishing** Design issues, URL, Home Page, Web Browser, Network Server, IIS, Web Server, Publishing / hosting website in a network server / web server. Web Auditing, VPN Account, Remote updating. **Blog Creation** Define Blog, History, Blog Taxonomy, What to Blog about? How to Blog – Self hosted or free blogging service, Difference between a blog and a website.
22-23	***Dreamweaver:*** • Create Web sites with hyperlinks and graphic images. • Use page layout tools such as tables, frames, and layouts. • Utilize Cascading Style Sheets (CSS), HTML, rollovers, behaviors, and forms. • Incorporate Dreamweaver with related software such as Macromedia Fireworks and Flash.	**Overview of Information Security** Understanding Information Security - Need of the Information security, Basics of IS (CIA) , History and evolution of IS, Dimensions of Information Security, Intranet/Internet, Information Security and Cyber Security relationship Why Care About Security? - Challenges to Information Security Benefits of Information of Security Understanding techniques to enforce IS

	• Incorporate Dreamweaver with related PHP, VBScript, JavaScript, MySQL etc.. • Manage Web sites with directories and different types of computer files.	in an organization Identifying tools to enforce Information Security Identifying frameworks to enforce Information Security **Overview of Security threats** Overview of Information Security Threats Types of threats – DDoS, Malicious codes, Espionage, etc Identification of Threats - Probing of threats, Scanning of threats, Modus Operandi, Sources of Threats, External threats , Internal threats , Best Practices or Guidelines used to Identify Threats - Conduct regular education and awareness trainings for employees and third parties, Best Practices or Guidelines used in mitigation of threats, Deploying up to date technology, Maintaining Systems and Procedures, Educating Users, Conducting regular education and awareness trainings for employees and third parties Collaborate with peers and experts through different forums to understand contemporary issues and solutions
24	**Open Source Tools for Web Designing** Practice on open source tools for web designing and its related work like : Text Editor – Aptana Studio, WYSIWYG web page editor - KompoZer, source code editor – Notepad++, plugin for Firefox – Firebug, highly stable and feature rich web development environment - Quanta Plus, cross platform text editor – jEdit, versatile graphics manipulation package – GIMP, cross operating system diagram creation application – Dia, graphics application – Krita, vector graphics editor – Inkscape, ftp application – FileZilla, SFTP client and FTP client - WinSCP,	**Information Security Vulnerabilities** Why do Information Security Vulnerabilities exists - Types of Technical Vulnerabilities, Types of Native Vulnerabilities, Understanding Security Vulnerabilities, Flaws in Software or Protocol Designs, Weaknesses in How Protocols and Software Are Implemented, Weaknesses in System and Network Configurations, Weaknesses in Web or Cloud applications, Weaknesses in Online e-transactions, Browser Security and Role of cookies and pop-ups, Security holes in Browser, Web Applications, OS, and Smart phones, Identifying role of Social sites and media in cyber security and vulnerability Understanding Vulnerability Assessment Tools and Techniques , Techniques to Exploit Vulnerabilities, Techniques to Fix

	Overview of Information Security Video show on Information Security **Overview of Security threats** Video show on Security Threats Mock test on security threats **Information Security Vulnerabilities** Video show on Security Vulnerabilities **Risk Management** Video show on Risk Management Mock test on Risk Management	the Vulnerabilities, Identify security vulnerabilities on a regular basis using requisite tools and processes. How to fix the security gaps and holes, Identifying liabilities of service providers, software vendors, Software authors, system owners, and third parties Best Practices and Guidelines to mitigate security Vulnerabilities **Risk Management** What is Risk? Relationship between Threat, Vulnerability, and Risk What Is the Value of an Asset? What Is a Threat Source/Agent? Examples of Some Vulnerabilities that Are Not Always Obvious What Is a Control? What Is Risk Likelihood and consequences? What Is Impact? Control Effectiveness Risk Management Purpose of Risk Management Risk Assessment (Phases) Why Is Risk Assessment Difficult? Types of Risk Assessment Different Approaches to Risk Analysis Best Practices and Guidelines in Assessing and Calculating Risks Develop and implement policies and procedures to mitigate risks arising from ICT supply chain and outsourcing. Best Practices and Guidelines in Mitigating Risk	
25	**Project Work - Web based Multimedia Project**		
26	**Examination**		

Tool & Equipment for a batch of 20 trainees

The following items are required for Semester – IV in addition to the items listed for the Semester – I, II & III.

Sl. No.	Name of the items	Quantity
1	WORKSTATION FOR MULTIMEDIA i700 (i7) PROCESSOR or Quad core or Higher 8 GB RAM 1 Terabyte HDD 22" TFT Monitor101 DVD OR BLU-RAY WRITER KEYBORD/INTERNET USB Optical Mouse, USB Keyboard with latest license of OS	2 Nos.
5	COLOUR LASER PRINTER	1 No.
7	OPTICAL SCANNER (DESK TOP TYPE)	1 No.
8	WEB CAM (DIGITAL CAMERA)	1 No.
9	DVD OR BLU-RAY WRITER	2 Nos.
16	500 VA or higher off – line UPS FOR NODES and server	11 Nos.
22	Room temperature thermometer	1 No.
24	Digital Still SLR Camera	1 No.
25	Digital Video Camera	1 No.
SOFTWARE		
4	Adobe Photoshop (academic edition with 10 user license)	1 No.
5	3D STUDIO Max (academic edition with 10 user license)	1 No.
6	Adobe Flash (academic edition with 10 user license)	1 No.
7	Adobe Dreamweaver (academic edition with 10 user license)	1 No.
8	Adobe premier Suite (academic edition with 10 user license)	1 No.
9	Front Page Editor (Academic edition with 10 user license)	1 No.
FURNITURE		
2	Printer Tables	1 No.
6	Steel cupboards drawer type	3 Nos.
7	Cabinet with drawer	2 Nos.
9	Steel almirah big size	1 No
10	Steel almirah small size	2 Nos.
Trainee Tool Kit		
1	Screwdriver Set of min. 5 bits (Combination of star & minus) + 1 ext. rod	1 Set
2	Crimping Tool for BNC and RJ-45 connectors	1 No. Each
3	Punching Tool	1 No.

Note : 1. All Software should be Network Version
   2. Course Related CBTs can be purchased (Optional)
   NOTE- LATEST VERSION OF HARDWARE AND SOFTWARE should be
   provided.

	Raw materials for 4th Semester	
1.	White Board Marker	1 Dozens
2.	Duster Cloth(2' by 2')	20 Pcs
3.	Cleaning Liquid 500 ml	2 Bottles
4.	Xerox Paper (A4)	As required
5.	Full Scape Paper (White)	1 reams
6.	Cartridges for printer	As required
7.	8 GB pen drives	4 Nos
8.	CDs	20 Nos
9.	DVDs	10 Nos.
10.	USB HDD 500 GB	02 Nos.

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