

Upgradation of ITIs into Centers of Excellence-Broad guidelines for implementation of the Broad Based Basic Training in ‘Information Technology Sector’.

These Centres will be providing multi skill training to meet the skill requirement of particular sector of industry with their active involvement in all aspects of training. The training will be provided in three parts as given below:

- ✓ Training in Basic skill areas for a period of one year.
- ✓ Training in Advanced modules for next six months.
The testing & certification for the Basic skill training during first year & also for Advanced training during next six months will be conducted by NCVT.
- ✓ Training in specialized modules mainly in the industry (The course curricula, duration etc will be designed in consultations with the IMC/local industry. The trade testing & certification for this component will be done jointly by the State Government & Industry. Said certificate will be recognized by NCVT

As per the recommendations of the EFC, Training in the shop floor should constitute 25-40% of the curriculum.

The training programme will have multi-entry and multi-exit provisions:

- ✓ Trainee can opt to go to the labour market after completing Broad Based Basic Training of one year duration as well as after completing 1½ year of training.
- ✓ Trainee can join training any time for advanced/specialised training in another module of same sector.
- ✓ ITI pass out trainee of the particular trade(s) from the conventional system can seek admission for advanced/specialised training in relevant sector.

In first year, curricula in the Area/Sector of ‘**IT Sector**’, uniform rotation for eight weeks each in the Basic Modules as mentioned below will be taken up. The trades from where existing infrastructure i.e. equipment/ instructor etc could be utilized for the training in ‘**IT Sector**’ sector is given below:

Basic modules	Name of the Module	Trade(s) from where existing equipment/ instructor could be utilized
ITBT-01	Basic Electrical & Electronics	Electrical/ Electronics
ITBT- 02	Basic Assembling and Maintenance of PC’s	Computer Hardware Maintenance/ COPA / IT&ESM
ITBT- 03	Basic Computer Networking	COPA / Computer Networking/ IT&ESM/ Fitter / Sheet Metal
ITBT- 04	Basic Office Automation	COPA /IT&ESM
ITBT- 05	Basic Internet & Multimedia	COPA /IT&ESM
ITBT- 06	Basic Database Processing	COPA /IT&ESM

For these modules, Trade Practical will be 28 hours /week and Trade theory for 4 hours / week. Apart from above Generic modules as mentioned below will be taught throughout the year.

ITBT-07- WORKSHOP CALCULATION & SCIENCE.....2 hrs/week

ITBT-08-ENGINEERING DRAWING2hrs/week

G-01-ENTERPRENEURSHIP AND COMMUNICATION SKILLS..... 2hrs/week

In addition, 4 hours/week have been kept for Library studies & Physical Training

Vocational Instructors:

NAME OF THE MODULE	No. of Vocational Instructors (VIs)
ITBT – 01 to 06	Six VIs one each for 6 module of relevant trades
ITBT-07 & ITBT - 08	One VI having Diploma in relevant field
G-01	One contract/part time / guest faculty for Generic module, ENTREPRENEURSHIP AND COMMUNICATION SKILLS –G-01

The eligibility and other criteria will be as follows:

Eligibility : 10th pass under 10+2 system with Science

Batch size : 96 trainees 16 in each module (20% supernumeraries be allowed to take care of drop outs as already exist under CTS)

Admission:

For basic training, admissions are to be made in August / Feb each year.

Fee Structure:

Fee Structure may be decided by States Govt. in consultation with IMCs . It may be desirable to prescribe a uniform tuition fee for a sector in all Centres of Excellence of a state .

Space:

Since workshop/theory class rooms are envisaged to be accommodated in the existing building of the ITI, therefore, following norms are prescribed only for new infrastructure is to be created .

- (1) Workshop space of 60 sqm for each basic module (except for ITBT- 3 where space required is 100 Sqm.)
- (2) Three Theory classrooms of 30 sqm each

(since workshop/theory class rooms are envisaged to be accommodated in the existing building of the ITI, some flexibility i.e. from 55 - 60 sqm area for workshop and 20-30 sqm area for class room area is proposed to be provided)

The Theory classrooms should have latest infrastructure including AV aids as per details given below:

1. Suitable Chairs/ tables*	-	As required
2. OHP/Epidiascope	-	1 No.
3. Laptop computer/PC (latest) & LCD projector**	-	1 No.
4. Magnetic white board	-	1 No.
5. White board	-	1 No.
6. Flip chart	-	1 No.
7. Storage Almirah	-	As required

(* Optimum utilization of space/flexibility may be kept in view)

(**Keeping in view the constraints of funds under the scheme, it is proposed to procure only one set of Laptop computer/PC / LCD projector for CoE. However, States may procure additional Laptop computer/PC/LCD projector from their funds) While selecting furniture, it should be kept in mind that these are meant for Centres of Excellence. Criteria like maximum flexibility/utilization of space should be kept in view.

Office Equipment:

For each CoE one Scanner, one Photocopy Machine and one PC/printer along with suitable accessories/furniture and internet connection (if not already available in the institute) is proposed to be provided for each CoE, in addition to the equipment prescribed in the syllabus.

Addition/alteration/Construction:

For Civil Works, tentative amount of Rs 40.00 lakhs have been proposed per CoE. It is envisaged to have separate block/ wing for the Centres of Excellence in the ITI campus. In case space is available in the existing building of an ITI for taking up new areas as per requirement of the cluster of Industry, the existing space will be renovated as per the need. Alternately, separate block will be built up in the same campus keeping in view the space requirements of the Electrical Sector.

While planning for addition /alteration/Construction of workshop and Class rooms, following may be kept in view:

- ✓ concept of a Centre of Excellence
- ✓ the fact that the requirement of funds for construction /addition /alteration for advanced training will be higher than that of basic training

Publicity:

Wide publicity & advertisement be given for better response . The role of the local as well as the concerned Industry is very vital for the success of this program.

States may consider providing additional equipment/ other facilities like separate Library/upgradation of existing Library, Conference Hall/ Committee Room etc. from their own funds.

I N D E X

UPGRADATION OF ITIs INTO CENTERS OF EXCELLENCE (CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(ONE YEAR)

MODULE NO.	NAME OF THE MODULE	DURATION IN WEEKS
ITBT - 01	Basic Electrical and Electronics	08
ITBT – 02	Basic Assembling and Maintenance of PC's	- do -
ITBT – 03	Basic Computer Networking	- do -
ITBT – 04	Basic Office Automation	- do -
ITBT – 05	Basic Internet and Multimedia	- do -
ITBT – 06	Basic Database Processing	- do -

GENERIC MODULE		
ITBT – 07	WORKSHOP CALCULATION & SCIENCE	@ 2 hrs / week 48 weeks
ITBT – 08	ENGINEERING DRAWING	- do -
G - 01	ENTREPRENEURSHIP AND COMMUNICATION SKILLS (given separately)	- do -

**UPGRADATION OF ITIs into CENTERS of EXCELLENCE
(CoE)**

SECTOR / AREA : INFORMATION TECHNOLOGY

**BROAD BASED BASIC TRAINING
(One Year)**

**MODULE – ITBT - 1: BASIC ELECTRICAL & ELECTRONICS
(Duration - 8 weeks)**

**BROAD BASED BASIC TRAINING
(One Year)**

MODULE - ITBT - 01: BASIC ELECTRICAL AND ELECTRONICS

(Duration - 8 weeks)

I) COURSE CONTENT

Practical	Theory
<p>Identify AC & DC voltmeters/ Multimeters. Measure DC voltage of a given battery-pack. Measure mains AC voltage.</p> <p>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.</p> <p>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).</p> <p>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.</p> <p>Capacitor – measuring the value, colour code. Measure capacitance using LCR meter.</p> <p>Identify of different types of inductors. Measure inductance using LCR meter. Test a step up transformer and finding</p>	<p>Electricity, Potential difference, AC & DC voltage, Current, Waveform, measuring devices (meter).</p> <p>Conductors, Insulators and semiconductors, examples and applications. Domestic electrical wiring - requirements Testing continuity of wires. Skinning and tinning of wires and cable ends</p> <p>Resistors, types, specifications, applications, identification using colour code, Resistors in series, parallel and series parallel. Ohms law and its application, KCL & KVL</p> <p>Solder joint. Soldering requirement & practice, Common soldering defects. De soldering – Precautions & practice.</p> <p>Application of PCB's. Types of PCBs, specifications. List some Connectors used with PCB</p> <p>Capacitor, types, specification, capacitors in series and parallel - applications</p> <p>Magnetism. Faradays Laws. Inductance, Inductor-types, specifications, applications.</p>

<p>transformation ratio. Testing a step down transformer and finding transformation ratio.</p> <p>Study Electro-magnetic effect using Electric Bell, Solenoid.</p>	<p>Measurement of inductance, Inductance in series and parallel. Inductive reactance. Self & mutual Inductance - properties, applications. Transformer, principle, construction, types, rating and applications. Testing a given transformer.</p>
<p>Identify different types of rectifiers and terminals.</p> <p>Refer to Diode handbook to get a diode for a given application and rating. Testing a given diode.</p> <p>Construct and test a Half wave rectifier. Construct and test a Full wave rectifier. Construct and test a Bridge rectifier.</p> <p>Test LED's. Use LED as output indicator in DC power supplies.</p> <p>Identify different types and packages of transistors. Identify transistors leads/terminals. Testing of transistors,</p> <p>Find a required transistor referring to Transistor data book. Testing amplification of different configurations using pre wired kits.</p> <p>Test cascaded amplifiers using pre wired kits.</p> <p>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.</p>	<p>Semiconductor device. Rectifier diodes, types, specifications and applications. Half wave rectifier, construction, working, output voltage, current rating, and output ripple. Efficiency, limitations, applications.</p> <p>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.</p> <p>Principle of working of a transistor. PNP and NPN transistors. Specification of transistors. Identification of transistors, terminals.</p> <p>Referring to Data book for selecting a transistor. Biasing of transistors – types, advantages, and applications.</p> <p>Types of amplifiers, working and applications. Cascaded amplifiers, types and applications. Oscillators, types, Harmonic-LC, RC, Crystal and relaxation-UJT, Pulse, pulse parameters, implications. Pulse circuits, multivibrators, applications.</p>
<p>Construct and test a Thyristor based power supply.</p> <p>Testing op-amp, testing and analyzing results of an OP-Amp.</p> <p>Wire and test a Multistage IC amplifier.</p>	<p>DIAC, SCR, TRIAC- principle of working, specifications, applications. Circuits and application.</p> <p>Differential amplifiers, OP-Amps, principle, characteristics, advantages, applications. List a few commonly used op-amps, Amplifiers in integrated circuit forms. IC oscillators - IC 555</p>

<p>Construct and test a 3-pin Voltage regulator.</p> <p>Construct and test an IC variable output Voltage regulator.</p> <p>Trace circuit of PC SMPS. Fault finding of SMPS used in PC.</p> <p>Troubleshoot SMPS used in PC's.</p> <p>Trace circuit, Fault finding and troubleshoot Power supplies used in PC I/O devices.</p> <p>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.</p>	<p>Other types of linear IC's and applications.</p> <p>Voltage regulator - zener diode, principle, application, limitations. Shunt and series regulators, applications, limitation.</p> <p>IC voltage regulators-fixed/variable, specifications, testing. Multiple output regulators, package details of some common IC regulator</p> <p>Comparison of linear and Switch mode power supplies.</p> <p>Working of SMPS. Types, specifications and applications. Circuit tracing of SMPS. Faultfinding and Trouble shooting approach of SMPS with emphasis on power supplies used in PC's and its I/O devices.</p> <p>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</p>
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Terminal objective

On completion of this module the participants will be able to:

1. Carry out soldering and de-soldering of electronic components.
2. Identify and Test passive and active electronic components.
3. Able to repair linear power supply and SMPS used in personal computer.
4. Maintain rechargeable batteries

II) TOOLS, MACHINERY, EQUIPMENTS ETC. FOR A BATCH OF 16 TRAINEES

Sl. No.	Name of Item	Quantity (Nos.)
1	Basic Analogue Electronics Trainer	4
2	SMPS Trainer	2
3	Insulated Screw Driver (different types)	17
4	Knife double bladed electrician	17
5	Insulated handle thin connector screw driver	17
6	Line tester	17
7	Heavy duty screw driver	17
8	Combination plier	08
9	Long nose plier	17
10	Tweezer	17
11	Phillips type screw driver set	17
12	Wire stripper	17
13	Soldering iron, 20/25watts	17
14	Desoldering pump	17
15	Digital Multimeter-hand held	17
16	Temperature controlled soldering/ desoldering station	04
17	SMD soldering/desoldering station	02
18	Wire gauge set	04
19	Permanent magnet bar	08
20	Solenoid with core	08
21	Electric bell	08
22	Battery storage lead acid 6V & 12 V	04 each
23	Maintenance Free Battery	02
24	Hydrometer	08
25	Battery charger	04
26	Rheostat variable values	08
27	Variable resistance /potentiometer	04
28	DC& AC ammeter 0-50 mA (table model for lab experiments)	04
29	DC& AC ammeter 0-500 mA(table model for lab experiments)	04
30	DC& AC ammeter 0-1mA(table model for lab experiments)	04
31	DC& AC ammeter 0-1 A(table model for lab experiments)	04
32	Analog Multimeter	04
33	LCR meter	04
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	32

38	Lug boards for circuit wiring	32
39	0-30 V, 2 Amp, Regulated DC Power Supply	17
40	SMPS of PC	08
41	PC Pentium IV or latest configuration (for testing with SMPS)	02
42	UPS 500 VA	02
43	Printer laser (B& W)	01
44	Transformer 0-12 V, 6-0-6 V, 1 Amp	04 each
45	Rubber gloves	08
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	16
4	Computer Table, Printer Table, Stools	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 8 drawers (standard size) for 16 trainees	02
8	Storage Almirah	As required
9	Book shelf (Glass panel)	01
10	Fire fighting equipment, first aid box etc.	As required

UPGRADATION OF ITIs into CENTERS of EXCELLENCE
(CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 02: BASIC ASSEMBLING AND MAINTENANCE OF PC's

(Duration - 8 weeks)

**BROAD BASED BASIC TRAINING
(One Year)**

**MODULE - ITBT - 02: BASIC ASSEMBLING AND MAINTENANCE OF PC's
(Duration - 8 weeks)**

I) COURSE CONTENT

Practical	Theory
<p>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.</p> <p>Verify the truth table of NOT, AND, OR, NAND and NOR gates. Construct a logic circuit using basic gates for a given output logic.</p> <p>Construct a 1's compliment & 2's compliment circuit and verify</p> <p>Construct and verify the truth table of flip-flop</p> <p>Construct and test a serial and parallel shift register</p> <p>Construct and test a 4-bit binary counter</p>	<p>Comparing Analog and Digital signal. Application of Digital electronics. Number system, Binary, octal and hexadecimal. Boolean algebra, D'Morgans theorem. Simplification of logic circuit.</p> <p>Identification of Digital IC's, Types of packages, applications. Basic digital gates and truth tables.</p> <p>1's & 2's compliment</p> <p>Flip-flop, register & counter</p> <p>Making a logic circuit for any custom requirement</p>
<p>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.</p> <p>Disconnect the external I/O and memory devices connected to the PC. Re-connect external I/O and memory devices connected to the PC.</p> <p>Practice windows operating system. Practice using notepad. Practice using paint.</p> <p>Identify system specifications.</p>	<p>Basic blocks of a digital computer. Function of each block. Personal computer organization. Introduction to various generations of PC's.</p> <p>Brief working and usage of I/O and memory devices used in a PC.</p> <p>Working with computer using windows operating system.</p> <p>Obtaining system information.</p>

<p>Use device manager to check status of installed devices. Identify and record IRQ. Make a start-up/emergency diskette.</p> <p>Uninstall, Reinstall and make settings for the following devices using Device manager: Keyboard, Mouse, Display, Multimedia, Printer, Modem, Web camera and other such external devices.</p>	<p>Ports on a PC and its specifications.</p> <p>Hardware interface and driver. IRQ and DMA.</p> <p>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 Modem. Installing and setting web camera and other devices.</p>
<p>Remove SMPS from cabinet, test SMPS for good working condition and refit to cabinet.</p> <p>Identify the internal parts of a PC. Identify cable connections inside a PC.</p> <p>Identify the specifications of motherboard. Identify the components of a motherboard. Remove, identify and refit add-in cards Remove, identify and refit RAM, Processor.</p> <p>Practice CMOS setting.</p> <p>Remove and refit FDD. Remove and refit HDD. Remove and refit CD ROM drive.</p> <p>Partition HDD, Format HDD, Load operating system.</p> <p>Load multiple Operating system (Windows & Linux). Test working.</p> <p>Assemble PC given all components. Check for working. Identify defect (Hardware/software). Rectify defect.</p> <p>Identify possibility of upgrading a given PC to given specification. Collect and upgrade PC. Check working of upgraded PC.</p>	<p>Memory Types and uses. Computer main memory, specifications, compatibility, expandability, types, manufacturers.</p> <p>SMPS used in PC, Specifications, types of connectors, testing.</p> <p>Mother board, types, specifications, components on the motherboard and its functions.</p> <p>BIOS, CMOS setup.</p> <p>FDD, principle of working, types, capacity, connecting to motherboard.</p> <p>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.</p> <p>CDROM drive, principle of working, types, specifications, manufacturers, connecting, jumper setting. COMBO drives.</p> <p>Identifying and Troubleshooting software related problems.</p>

Load maintenance utilities to check system performance.	Identifying and Trouble shooting hardware related problems.
Test and report system performance.	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.

Terminal objective

On completion of this module the participants will be able to:

1. Carry out routine maintenance of PC's.
2. Identify hardware and software faults in a PC and troubleshoot
3. Assemble a PC
4. Upgrade a PC to requirement

II) TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

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	08
5	Logic Probes/Logic Pulser	08
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)	08
11	Digital Multimeter	17
12	Analog Multimeter	08
13	Digital LCR Meter	03
14	Bread Boards for circuit wiring and testing	20
15	Megger 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	17
22	Floppy Disk Drive	17
23	CD ROM Drive	08
24	Display card	08
25	Ethernet card	08
26	Computer monitor 15"/17" of different types	04
27	Cabinet with SMPS	08
28	Keyboard and mouse	08 each
29	Thumb drive (latest specification)	08
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	17
38	Soldering iron	17
39	De-soldering pump/gun	17
40	Temperature controlled soldering/ desoldering station	04
41	Computer Tool kit for students	17
42	Screw Driver Set - Star/Flat of different sizes	04 each
43	Long Nose Plier	08
44	Combination Plier	04
45	Tweezer	17
46	Wire Stripper	08
47	IC Puller	17
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		
49	Microsoft Window 2000/ XP	As required
50	MS Office	As required
51	Anti virus latest version	As required

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Instructor table & chair	01 each
2	Computer Tables	As required
3	Revolving Stool cum chair	16
4	Computer Maintenance Tables of Suitable sizes	As required
5	Tables for Printers/Scanners	As required
6	Green Glass Board	01
7	Metal Rack	As required
8	Locker with 8 drawers (standard size) for 16 trainees	02
9	Storage Almirah	As required
10	Book shelf (Glass panel)	01
11	Shoe Rack	As required
12	Fire fighting equipment, first aid box etc.	As required

UPGRADATION OF ITIs into CENTERS of EXCELLENCE (CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 03: BASIC COMPUTER NETWORKING

(Duration - 8 weeks)

**BROAD BASED BASIC TRAINING
(One Year)**

MODULE - ITBT - 03: BASIC COMPUTER NETWORKING

(Duration - 8 weeks)

I) COURSE CONTENT

Practical	Theory
<p>SAFETY: Practice of safety while lifting and shifting fragile and heavy equipments.</p> <p>Check earthing and identify the type of earthing. Practice electrical safety while connecting, switching-on and switching-off of heavy electrical outlet points.</p> <p>Practice first aid in case of physical injury. Practice first aid in case of electrical hazard.</p> <p>MEASUREMENTS: Measure linear dimensions in mm, cm, meters, inch, feet and conversions. Measure internal and external hole diameters using calipers. Use of Micrometer for measurement.</p> <p>MECHANICAL SKILLS: Practice on shearing, Cutting, bending to make rectangular boxes.</p> <p>Practice of drilling, Use of bolts & nuts, screws of different types, sizes and shapes.</p> <p>Practice Taping of different sizes. Rivets and Riveting.</p> <p>Find current carrying capacity of wires and cables.</p>	<p>SAFETY: Safety of working personal and equipment. Safety while lifting and shifting of fragile and heavy equipments. Safety precautions.</p> <p>Earthing, need and importance of Earthing, Types of earthing, Electrical safety. Electrical safety precautions.</p> <p>First aid in case of physical injury. First aid in case of Electrical hazard.</p> <p>MEASUREMENTS: UNITS of measurement. Standards. Conversion factors. Measuring devices used for coarse and precision measurements. Tolerance and errors in measurement, causes and corrections.</p> <p>MECHANICAL SKILLS: Shearing, Bending, cutting and Filing. Tools used in sheet metal workshop. Procedure and precautions for making of boxes/metallic housing/bays.</p> <p>Drilling Taping and Riveting.</p> <p>Different types of wires used for electrical and electronic circuits and wiring – its specifications.</p> <p>Wiring standards and types for domestic and industrial wiring.</p>

<p>Practice of Domestic wiring using different components of wiring. Visit to industry for observing industrial wiring type.</p>	
<p>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.</p> <p>Disconnect the external I/O and memory devices connected to the PC. Re-connect external I/O and memory devices connected to the PC.</p> <p>Practice windows operating system. Practice using notepad. Practice using paint. Identify system specifications.</p> <p>Identify physically devices interfaces installed with a PC.</p> <p>Check status of installed devices using system information and device manager.</p> <p>Practice facilities provided by the device manager.</p> <p>Install a new device (internal/external) to the PC and carryout necessary setting.</p>	<p>Basic blocks of a digital computer. Function of each block. Personal computer organization. Introduction to various generations of PC's.</p> <p>Brief working and usage of I/O and memory devices used in a PC.</p> <p>Working with computer using windows operating system</p> <p>Interfacing I/O device to motherboard. Need and function of driver.</p> <p>Identifying devices installed in the PC. Enabling, disabling, refreshing, checking properties of devices installed.</p> <p>Installing new devices, setting and testing</p>
<p>Identify components of a simple LAN environment.</p> <p>Identify different types of cables used for networking.</p> <p>Identify the protocols installed in an existing LAN setup. Draw LAN diagram Identify the NIC installed & MAC address</p> <p>Install of NIC card.</p> <p>Make UTP cross cable and testing using continuity tester. Establish connection between two computers using a cross cable.</p>	<p>Serial data communication, principle, standards/protocols and devices/applications.</p> <p>Parallel data communication, principle, standards/protocols and devices/applications.</p> <p>Features of Networked computers.</p> <p>Components required for networking.</p> <p>Network Topologies. Comparison.</p> <p>Network Protocols, applications.</p> <p>Physical components planning for a small LAN. Network operating systems and features.</p>

Make a UTP straight patch cord and testing using continuity tester.	Network cables, types, specifications, standards, application.
Connect and test a straight cable using a N-port switch and computers.	Peer – to – peer connection. Client – server connection, comparison, applications.
Establish a peer-to-peer connection.	What is router, its function, configuration table.
Configure a router Add/Delete entries in configuration task. Create work groups.	Concept of work groups and uses. UTP Cross cable for testing connection between two computers.
Set IP address and subnet mask. Establish connection. Use of Ping command.	UTP straight cable and connecting through N-port Switch.
Establish sub networks using subnet mask.	Allocation of IP address and Subnet mask.
Share resources in LAN.	Cabling procedures and introduction to structured cabling.
Fault find and troubleshoot network problems.	Resource sharing in LAN environment.
Trace a network route. Create users, allocate rights and testing.	Creating users in Windows server. Resource sharing and Security.
Implement security in LAN.	Sharing a single internet connection in LAN, with or without the use of Proxy. Multi user OS.
Use Linux commands.	Linux Operating system, OS commands. Installing devices.
Install and uninstall devices using Linux command.	Setting up LAN in Linux environment.
Set-up LAN under Linux.	

Terminal objective

On completion of this module the participants will be able to:

1. Prepare straight and cross cables
2. Install wall outlets
3. Interconnect computers using switch and establish peer-to-peer, client-server connection
4. Create user's groups and allocate rights and privileges

II) TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

Sl. No.	Name of Item	Quantity (Nos.)
Hardware		
1	<u>Computer Server</u> 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
2	<u>Clients/Nodes</u> Intel Pentium IV @ 2.0 GHz or higher, 512 MB RAM, Intel Motherboard, 40 GB Hard Disk, 17" Monitor, Keyboard, Mouse, 52-X CD ROM Drive, 1.44 MB FDD, Multimedia kit, Network Interface Card	10
3	Digital Multimeter	05
4	Dot Matrix Printer	01
5	Inkjet printer	01
6	Laser printer B & W (one should be network printer)	02
7	Scanner	01
8	Add-in cards for PC	As required
9	8/16 port HUB/Switch	04
10	ISDN Line (for Internet)/Cable broadband connection	01
11	Network Interface Card	10
12	Modem (Internal & External)	01 each
13	Switch	01
14	Router	01
15	Scanner	01
16	UPS 500 VA for each computer	11
17	Soldering iron	17
18	De-soldering gun	04
19	Temperature controlled soldering/ de-soldering station	02
20	Computer Tool kit for students	10
21	Crimping tools for network cable	04
22	UTP cable	As required
23	RJ 45 connectors	As required
24	Outlet points / Wall outlets	As required
25	Vacuum cleaner	01
Software		
26	Microsoft Window 2000 Server (license)	As required.
27	Windows (95/98/Me/XP) license	As required.
28	Anti virus latest version	As required.
29	Network troubleshooting utilities	As required
30	Linux Server	01

Category	Sl. No.	Name of Item	Quantity (Nos.)
Hand tools	1	Rule steel 30 Cm	17
	2	Square Try 10 Cm blade	17
	3	Scriber	17
	4	Punch center	17
	5	Screw Driver star/flat	17 each
	6	Hammer ball pin .22 Kg	17
	7	File flat 30 Cm 2 nd cut	17
	8	Safety goggles	17
	11	Pincer	17
	12	Electrical double bladed knife	08
	13	Cross pin hammer 115 gms with handle	04
	14	Heavy duty Screw driver 200 mm	08
	15	Marking gauge 6"	04
	16	9 mm Chisel	04
	18	File triangular 15 Cm smooth	04
	19	File round 20 Cm 2 nd cut	04
	20	File square 15 Cm 2 nd cut	04
	22	File flat 30 Cm bastard	04
	24	File swiss needle type set of 12	04
	27	File half round 25 Cm 2 nd cut	04
	30	File half round 25 Cm bastard	04
	31	Spanner whit worth DE 6 mm to 25 MM set	04
	32	Spanner adjustable 15 Cm	04
	33	Scraper flat 15 cm	04
	34	Plier combination 15 Cm	04
	35	Taps & dies complete set American	04
	36	Taps & dies complete set Metric	04
	37	Spanner whit worth DE 6 mm to 25 MM set	04
	38	Micrometer 25-50 mm outside	04
	39	Vernier caliper 20 Cm	04
	40	Mallet	04
	41	Allen key set	04
	42	Wire Stripper 20 Cm	04
	43	Caliper outside 15 Cm spring	04
	44	Caliper in side 15 Cm spring	04
	45	Divider spring	04
	46	Hacksaw frame adjustable 20-30 Cm	04
	47	Sprit level metal 15 Cm	02
	48	Portable Hand drill Machine (electric) 0-10 mm with accessories	02
	49	Bench Drilling Machine 12 mm with accessories	01

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Suitable Work Tables with vices	As required
2	Stools	17
3	Tool Cabinet	02
4	Metal Rack	As required
5	Locker with 8 drawers (standard size) for 16 trainees	As required
6	Storage Almirah	As required
7	Book shelf (Glass panel)	1

Sl. No.	Computer Lab. Furniture	Qty. (Nos.)
1	Instructor table & chair	1 each
2	Computer Tables	As required
3	Revolving Stool cum chair	16
4	Tables for Printers/Scanners	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 8 drawers (standard size) for 16 trainees	02
8	Storage Almirah	As required
9	Book shelf (Glass panel)	01
10	Shoe Rack	As required
11	Fire fighting equipment, first aid box etc.	As required

UPGRADATION OF ITIs into CENTERS of EXCELLENCE (CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 04: BASIC OFFICE AUTOMATION

(Duration - 8 weeks)

**BROAD BASED BASIC TRAINING
(One Year)**

MODULE - ITBT - 04: BASIC OFFICE AUTOMATION

(Duration - 8 weeks)

I) COURSE CONTENT

Practical	Theory
<p>Identify the external I/O and memory devices connected to the PC.</p> <p>Identify the controls of each of these devices including the system (CPU) unit.</p> <p>Disconnect the external I/O and memory devices connected to the PC. Re-connect external I/O and memory devices connected to the PC.</p> <p>Practice windows operating system. Practice using notepad, WordPad and calculator.</p> <p>Identify operating system and version loaded in the PC.</p> <p>Identify different application packages loaded in the PC.</p> <p>Identify and use the utilities coming along with the operating system.</p> <p>Microsoft WORD</p> <p>Open, resize and close MS WORD. Opening, edit and save/ "save as" documents.</p> <p>Use all menu bar features. Use all Standard tool bar features.</p> <p>Create Document, non-documents files. Create templates. Create tables. Insert pictures and videos.</p> <p>Mail merge documents. Creating Bookmarks.</p>	<p>Introduction to PC, I/O devices and its application</p> <p>Keyboard Ergonomics. Typing rule using alphabet, numeric keys and special keys. Use of function keys. Sitting posture in front of the computer, placement of hand, and movement of fingers.</p> <p>Switching and shutting down the computer,</p> <p>Operating system</p> <p>Languages – low and high level , packages, editing and file processing using note pad, saving file in folders and storage media, transferring file from one media to another.</p> <p>Features and functions of Operating systems, different types of operating systems. Windows OS.</p> <p>Microsoft WORD</p> <p>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,</p> <p>Document, non-documents files. Creating templates. Creating tables.</p> <p>Inserting pictures and videos. Mail merge. Book marks.</p>

Add Bullets and numbering. Create Hyperlinks. Create brochures. Create book work

Microsoft EXCEL

Use Microsoft Excel for creating worksheets with Graphs and Visuals.

Microsoft POWER POINT

Use features of Microsoft Power point in for creating multimedia presentations with custom animation and effects.

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.

Adobe PageMaker

Use PageMaker features for creating Pamphlets, brochures, reports, illustrative works and long book works.

Bullets and numbering. Hyperlinks. Creating brochures. Creating bookwork.

Microsoft EXCEL

Use of Microsoft Excel features for creating worksheets with mathematical formulae and graphs.

Microsoft POWER POINT

Use of Microsoft Power point features for creating multimedia presentations.

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.

Adobe PageMaker

Use of PageMaker features for creating Pamphlets, brochures, reports, illustrative works and long book works.

Corel Draw

Use features of Corel draw to create artistic characters and shapes for use with page maker.

Corel Draw

Use of features of Corel draw for creating artistic characters and shapes for use with page maker.

Terminal objective

On completion of this module the participants will be able to:

1. Create documents, reports, Memos, and such, required in an office situation including mail merge.
2. Create worksheets for a given requirement, manipulate data and give results.
3. Create PowerPoint presentations.
4. Use Outlook for effective planning and scheduling of day to day work.
5. Create illustrative brochures and pamphlets using PageMaker and Corel draw.

II) TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

Sl. No.	Name of Item	Quantity (Nos.)
Hardware		
1	Intel Pentium IV @ 3.2 GHz or higher, 512 MB RAM, Intel Motherboard, 40 GB Hard Disk, 17" Monitor, Keyboard, Mouse, 52-X CD ROM Drive, 1.44 MB FDD, Multimedia kit, Network Interface Card or latest configuration	10 (1 for server, 1 for Instructor, 8 for students)
2	Inkjet printer	01
3	Laser printer (B&W)	02
4	Scanner	01
5	8/16 port Hub	02
6	ISDN Line (For Internet) or Cable broadband connection	01
7	UPS 500 VA for each computer	10
8	Vacuum cleaner	01
9	Computer tool kit	02
Software		
10	Microsoft Window2000/XP or latest	As required
11	MS Office 2000/ XP or latest with 10 user license	As required
12	Adobe PageMaker	As required
13	Corel Draw	As required
14	Anti virus latest version	As required

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Instructor table & chair	1 each
2	Computer Tables	As required
3	Revolving Stool cum chair	16
4	Tables for Printers/Scanners	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 8 drawers (standard size) for 16 trainees	02
8	Storage Almirah	As required
9	Book shelf (Glass panel)	01
10	Shoe Rack	As required
11	Fire fighting equipment, first aid box etc.	As required

UPGRADATION OF ITIs into CENTERS of EXCELLENCE (CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 05: BASIC INTERNET AND MULTIMEDIA

(Duration - 8 weeks)

**BROAD BASED BASIC TRAINING
(One Year)**

**MODULE - ITBT - 05: BASIC INTERNET AND MULTIMEDIA
(Duration - 8 weeks)**

I) COURSE CONTENT

Practical	Theory
<p>Accessories Practice on paint, entertainment & games</p> <p>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.</p> <p>Practice chatting with Video. Join News group.</p> <p>Getting connected using FTP. Down loading software's. Upgrading Browser versions. Using Telnet to get connected to remote computer.</p> <p>MS Outlook Express Using features of OUTLOOK Express for sending and receiving Emails. Setting multiple accounts in outlook express to send/receive mails. Maintaining Address book.</p> <p>Connecting to Internet Installing modem in computer. Installing Web Browsers. Setup internet connection using ISP. Setup browser settings.</p>	<p>Basic blocks of a digital computer. Function of each block. Introduction to various generations of PC's. Working with computer using windows operating system. Creating files and folders. Accessories – paint, entertainment, games</p> <p>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 software's –FTP. Getting connected to a distant computer and Telnet.</p> <p>MS Outlook Setting-up outlook express for sending and receiving mails using multiple ID's. Features provided by Outlook express.</p>

<p>HTML</p> <p>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 specific time. Hide controls on web page. Set different colors to different Headings. Change paragraph font size and color using styles.</p> <p>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.</p>	<p>HTML</p> <p>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)</p> <p>Picture formats, animated files and its usage in web pages. Web page design using Front page. Procedure for Hosting of web sites.</p>
<p>Adobe Photoshop</p> <p>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.</p> <p>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.</p> <p>Practice use of selection tools. Practice moving, copying and deleting objects. Practice grouping & ungrouping objects. Practice transforming selected objects. Practice distorting with 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.</p>	<p>Adobe Photoshop</p> <p>Different composition of colors. The colors of the visual spectrum. Evidence of color theory implementation from existing graphics found in print media. Picture formats.</p> <p>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.</p> <p>Image formats and incorporation of compression technique for large storage size of Image files. Creating Vector Graphics.</p> <p>Using tools for publishing artwork on the Web & in print. Exploring new creative options and producing high quality images for print & web. Creating exceptional imagery with easier access to file. streamlined web design.</p> <p>Photo re-touching, colorful image collages,</p>

	artistic backgrounds. Creation of the optimized images with roll over effects and image mapping. Special effects on images using Layer masking and Vector masking.
<p>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.</p> <p>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 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.</p> <p>Apply animation to the models created so far. Practice modeling 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.</p>	<p>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.</p> <p>Multimedia –Video Introduction to the concept of 3D. Orthographic and Perspective views. Creating basic objects in 3D. Introduction to command panel.</p> <p>Working with “Properties” of 3D objects. Editing 3D objects using modifiers. Elements of View Port controller. Creating objects with Standard Primitives and 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.</p> <p>Low Polygon Modeling.</p>

Terminal objective

On completion of this module the participants will be able to:

1. Establish internet connection and use internet for getting required information and sending mails
2. Download soft wares from internet
3. Configure and use outlook express for sending and receiving mails.
4. Create simple web pages.
5. Create graphic files and edit.
6. Create simple animations.

II) TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

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, 52-X CD ROM Drive, 1.44 MB FDD, Multimedia kit, Network Interface Card or latest configuration	10
2	Inkjet printer	01
3	Laser printer (B & W)	02
4	Scanner	01
5	8/16 port Hub	02
6	ISDN Line (For Internet)/ cable broadband connection	01
7	UPS 500 VA for each Computer	10
8	Vacuum cleaner	01
9	Computer Tool kit	02
Software		
10	Microsoft Window	As required
11	Adobe Photoshop	As required
12	3D STUDIO Max	As required
13	Anti virus latest version	As required

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Instructor table & chair	01 each
2	Computer Tables	As required
3	Revolving Stool cum chair	16
4	Tables for Printers/Scanners	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 8 drawers (standard size) for 16 trainees	02
8	Storage Almira	As required
9	Book shelf (Glass panel)	01
10	Shoe Rack	As required
11	Fire fighting equipment, first aid box etc.	As required

UPGRADATION OF ITIs into CENTERS of EXCELLENCE (CoE)

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 06: BASIC DATABASE PROCESSING

(Duration - 8 weeks)

**BROAD BASED BASIC TRAINING
(One Year)**

**MODULE - ITBT - 06: BASIC DATABASE PROCESSING
(Duration - 8 weeks)**

I) COURSE CONTENT

Practical	Theory
<p>Identify the external I/O and memory devices connected to the PC.</p> <p>Identify the controls of each of these devices including the system (CPU) unit.</p> <p>DOS – Internal and external commands DOS- creating simple batch file</p> <p>Practice on formatting of floppy disk with various switch options Creating directory and sub-directories</p> <p>Practice windows operating system.</p>	<p>Personal computer configuration – an introduction</p> <p>Operating system features and functions. Introduction to application programs and packages</p> <p>PC booting sequence.</p> <p>DOS - internal commands and external commands., Autoexec.bat, Config.sys. Differentiate between .bat & .com file</p> <p>Windows OS - Working with computer using windows operating system. Windows files and folders properties. Using resources and file management</p>
<p>Opening an existing and Creating a new database with MS-ACCESS. Identifying the objects supported MS-ACCESS</p> <p>Creating table in Data sheet and design view. Enter data and edit data. Data validation and verification in Access Develop customized form for data entry.</p> <p>Develop Queries and generate report for required output.</p> <p>Generate customized Reports.</p> <p>Setting relationship between tables</p> <p>Setting relation ship between tables and queries or both</p>	<p>Database concepts – data, object and properties: Definition.</p> <p>Elements of database in Access : table, form, query, report.</p> <p>Creating tables in Datasheet and design view, setting field properties. Editing data in table</p> <p>Developing customized form for data entry and editing.</p> <p>Data validation and verification Developing Queries and generating reports</p> <p>Relational Database systems. Its advantages and applications Using Multiple table, data entry, and</p>

Practice use of Visual basic with MS Access as front end.	generating reports
Create a simple application using Access and VB for a given specification.	Concept of Front end for database. Software's used as Front-end. Use of Visual basic as front end with access.
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.

Terminal objective

On completion of this module the participants will be able to:

1. Use MS-DOS commands for creating simple batch files (no looping & branching)
2. Design a data base and create a table for given requirement
3. Create a query and generate reports.
4. Use visual basic as front-end.
5. Develop simple application using MS-ACCESS & VB.

II) TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

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, 52-X CD ROM Drive, 1.44 MB FDD, Multimedia kit, Network Interface Card or latest configuration	10
2	Dot Matrix Printer	01
3	Inkjet printer	01
4	Laser printer (B&W)	01
5	Scanner	01
6	8/16 port Hub	02
7	ISDN Line (For Internet)/Cable broadband connection	01
8	UPS 500 VA for each Computer	10
9	Vacuum cleaner	01
10	Computer tool kit	01
11	Network testing utility software	As required
Software		
12	Microsoft Window	As required
13	Linux operating system	As required
14	MS Office Suite	As required
15	Visual Basic	As required
16	Antivirus latest version	As required

Sl. No.	Workshop Furniture	Qty. (Nos.)
1	Instructor table & chair	01 each
2	Computer Tables	As required
3	Revolving Stool cum chair	16
4	Tables for Printers/Scanners	As required
5	Green Glass Board	01
6	Metal Rack	As required
7	Locker with 8 drawers (standard size) for 16 trainees	02
8	Storage Almira	As required
9	Book shelf (Glass panel)	01
10	Shoe Rack	As required
11	Fire fighting equipment, first aid box etc.	As required

**UPGRADATION OF ITIs into CENTERS of EXCELLENCE
(CoE)**

SECTOR / AREA: INFORMATION TECHNOLOGY

BROAD BASED BASIC TRAINING

(One Year)

MODULE – ITBT - 07: WORKSHOP CALCULATION & SCIENCE

(Duration – 2 hours/week - 48 weeks)

**BROAD BASED BASIC TRAINING
(ONE YEAR)**

**MODULE – ITBT - 07: WORKSHOP CALCULATION AND SCIENCE
(DURATION – 2 HOURS / WEEK – 48 WEEKS)**

I) COURSE CONTENT:

Familiarization with

1. Basic algebra – algebraic formula – quadratic equations
2. Trigonometry – Trigonometric functions – calculation of areas
3. Mensuration – Find the area and volume of different objects conversion of feet, inch, cm, mm
4. Find the equivalent resistance on series circuit, parallel circuit
5. Find the equivalent resistance, voltage and current across each component of a series circuit, parallel circuit and series parallel circuit.
6. Solve the series parallel and network circuits using Kirchoff's Law
7. Series and parallel circuits of capacitors/Induction
8. Problems on series ac circuits, impedance, power and power factor
9. Series and parallel resonance circuit
10. Find the turns ratio, efficiency and losses in transformers
11. Find the average dc, load current and efficiency, ripple factor, in half wave and full wave rectifiers
12. Find the I_B , I_C , I_E in various types of biasing circuits and transistor configuration circuits
13. Calculate the voltage gain, current gain and power gain in dB units in single stage emitter following amplifier
14. Problems related to Zener regulator, series regulator and series parallel regulator circuits
15. Find the frequency of oscillation in various oscillator circuits
16. Problems on conversion of Decimal numbers to binary and Hex
17. Addition and subtraction of Binary and Hex, numbers
18. Problems on Boolean algebra
19. Calculation of SI & Compound Interest
20. Calculations on pulse duration, pulse width, frequency

21. Percentage gain, profit and loss
22. Simple calculation of preparation of results, income tax, etc.
23. Representation and fractions in different format e.g. experimental format, decimal and percentage formats
24. Conversion and number in bit, byte, kilo byte, mega byte, gega byte, etc.
25. Simple calculation of material cost e.g. sheets, wires, battons, papers, cables, etc.

**UPGRADATION OF ITIs into CENTERS of EXCELLENCE
(CoE)**

SECTOR / AREA: INFORMATION TECHNOLOGY

**BROAD BASED BASIC TRAINING
(One Year)**

**MODULE – ITBT - 08: ENGINEERING DRAWING
(Duration – 2 hours/week - 48 weeks)**

BROAD BASED BASIC TRAINING

(ONE YEAR)

MODULE – ITBT - 08: ENGINEERING DRAWING

(DURATION – 2 HOURS / WEEK – 48 WEEKS)

I) COURSE CONTENT:

1. Engineering drawing and its importance
2. Types of lines and their applications
3. Free hand sketching of tools
4. Lettering practice
5. Dimensioning their methods and specific uses
6. Types of projections
7. Simple orthographic projections in 1st angle method
8. 3rd angle projections of various objects and exercises with dimension
9. Isometric views of objects
10. Sectioning and sectioned views
11. 1st angle and 3rd angle projections of a computer monitor, floppy disk drive and hard disk drive
12. Draw the symbols for various electrical measuring instruments, switches, fuse, protective and controlling devices in electrical circuits
13. Wiring diagram for small houses
14. Draw the symbols of various electronic components
15. Draw the circuit diagram of various types of rectifiers, amplifiers, oscillators, power supplies, multivibrators
16. Draw the circuits of shift registers, counters, digital clock, multiplexer
17. Details of various TTL and CMOS ICS, RAM, EPROM, A/D Converter, D/A Converter
18. Detailed block diagram of computer
19. Detailed block diagram of computer
20. Drawing and component layout of motherboard, display card, Ethernet card, etc.
21. Lay out of key board
22. Front and Rear view of System Unit of PC, Monitor, FDD, HDD, Modem, Printers
23. Pin diagram of various connectors & cables used in personal computer.