

CURRICULUM
OF
PG DIPLOMA
IN
COMPUTER HARDWARE & NETWORKING
ONE YEAR (TWO SEMESTER)

INSTITUTE OF RESEARCH, DEVELOPMENT & TRAINING

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Main Features of Curriculum

- 1. Title of the course : PG Diploma in Computer Hardware & Networking**
- 2. Duration of Course : One Year**
- 3. Type of the course : Full time**
- 4. Pattern of course : Semester**
- 5. Intake : 60**
- 6. Admission Qualification : Graduate in any Discipline**

I. NEED ANALYSIS :

With the development of civilization, human needs to keep on increasing their fulfillment needed simulation, analysis of lot of information's too became essential. Now the individual responsibilities of every responsible citizen grew up to such a light that it is difficult for him to handle them successfully. Human memory too has its own limitations. So here comes the computer to help in all kind of decision making, whether it is highly complicated research work, war strategy, market speculations or day-to-day need of human life etc. As a matter of fact every individual activity needs decision making. So the computer is the need of organizations and also the need of individual being. With PCs penetrating every area of life, wide proliferation of internet and networking, It will not be exaggeration if we say that it is "Computer era".

So is the need for developing a course for computer field at diploma level. The course aims to develop personals, capable of taking responsibilities such as installation, repair and maintenance, networking, security administration and operating computer units. It is supposed that such personnel will not face any dearth of employment because of omnipresent nature of computer. Major areas being Hardware industry, Infrastructure Managed Services, BPO's, IT, Telecom, Banking & Financial sectors, Manufacturing Sectors.

The syllabus for diploma in computer Hardware & Networking has been developed to meet above mentioned aims. Obviously achievement of any aim requires knowledge of the means and procedures of their utilisation. With this view various courses have been carefully selected and their length and depth decided by experienced experts in the field.

II. JOB POTENTIAL/JOB OPORTUNITIES

JOB POTENTIAL

Background Information Regarding Computer Industry: Most of the industries in Computer area are in private sector. The job designations are not standard. They change from firm to firm depending upon the size of firm and the nature of work, the firm is engaged in R & D or marketing software development etc. In general the jobs for a diploma holder in Computer engineering are available in the following areas :

- i. Service Division.
Maintenance, service and installation of computer system.
- ii. Production and Quality Control Division.
- iii. Marketing division.
- iv. Commercial (stores, purchase and pricing)
- v. Research and Development.
- vi. Network Administration & Security

JOB OPPORTUNITIES

The possible job opportunities for the product of this curriculum are :

1.3.1. Junior engineer/Design Assistant/Senior Technical Assistant in R&D, Quality Control and Testing activities.

1.3.2. Shopfloormanger/Assembly supervisor in manufacturing and production

Activities.

1.3.3. Installation Engineer/Service Engineer/Junior Engineer/ Junior Service Engineer in installation, Service and Custom Support Activities.

1.3.4. Junior Marketing Executive/Junior Purchase Officer/Junior Stores Officer in Marketing and Commercial activities

1.3.5 Network Engineer/ Network & Security Administrator

III ACTIVITIES/JOB DESCRIPTION

Service Division:

Maintenance, service and installation of computer systems identify hardware and software faults and rectify them.

Suggests the desirable changes in the design in view of this maintenance Experiences.

Rectify fault by component and card level.

Advise the customer on site preparation and check the site.

Install the systems and test its operation.

Train the customer in the operation and the use of the system.

Help Desk Services, Server Management, Database/Security/ Web server Administration Networking

Production and Quality Control:

Indenting the material from stores and schedule the work of skilled workers.

- Fault finding in assembly work by visual inspection.
- Guiding skilled workers in component identification, component testing and precision assembly work.
- Fabricate (if required) test and interconnect different sub-assemblies and subsystems like power supply, interface, processor and memory units, video display unit, printer, plotter, graphic monitor, hard disc drives interface etc.
- Managing personnel like technicians and skilled workers.

Marketing:

- Meeting with prospective customer under the guidance of sales engineer.
- Arranging demonstration at the site of customer.

Commercial:

- Assists sales engineer in the sales of computer system (Contacts customer, arranges demonstration, preparation of technical documents and specification.
- Purchase material (writes specifications, receiving quotations, prepares

and checks comparative statements, checks bills).

- Prepare bill for service charges and cost of materials used.

- Incoming inspection (checking quality, quantity and specification of the material supplied against orders).

- Maintains stocks and records.

Research & Development Work:

- Design simple microprocessor based subsystem (without optimization) under the guidance of design engineer.

- Printed circuit board (PCB) layout design under the guidance of design engineer.

- Fabricates prototype of a subsystem or system.

- Plans flow of activities for production along with engineer.

- Test systems at card level, subsystem level and at complete system level.

- Documents the layouts, circuit diagram, procedures and processes.

- Develops systems software, the line drivers and interface with the guidance from engineer and runs it.

- Communicates with engineer and assists him in converting technical ideas into practical shape.
 - Assist engineer in laying test procedures, tests standards and maintaining the quality of the products.

IV. COURSE OBJECTIVE:

Course objectives lay the foundation for planning educational programme.

1. Knowledge:

1.1 He must acquire basic concepts in electronic components active as well as passive.

1.2 He must acquire basic concepts and principles of working of linear and digital circuits using discrete components and integrated circuits.

1.3 He must have the knowledge of testing procedure of active and passive

components, (including integrated circuits) discrete and digital circuits by

- making use of different test instruments as per to their specification.
- 1.4 He must acquire knowledge of system block diagram and working principles of different computer peripherals.
 - 1.5 He must acquire the knowledge of making P.C.B. layouts and learn drafting techniques.
 - 1.6 He must acquire the knowledge of efficient use of system software by writing a small diagnostic programme to test system.
 - 1.7 He must acquire the knowledge of working principles of the total system i.e. C.P.U., peripherals, interfaces and system software.
 - 1.8 He must acquire the knowledge of Help Desk Services, Server Management, Database/Security/ Web server Administration and Networking .
2. Skill
- 2.1 He must acquire skill in finding faults in a computer system. The fault may be at component level or at card level or at sub system level. After finding fault he must be able to repair to it.
 - 2.2 He must acquire skill in preparation of site for installation of a computer.
 - 2.2 He must acquire skill in installing different subsystem (Power supply, Video display unit, C.P.U. , Printer, Plotter, Graphic monitor, Disc drives etc.).
 - 2.4 He must acquire skill in operating and testing the working of different subsystems installed.
 - 2.5 He must acquire skill making (or designing) layout on printer circuits board for a given electronic circuit.
 - 2.6 He must acquire skill in fabricating (electronic circuit using different electronic components including ICs) on a printed circuit board according to a given circuit diagram.
 - 2.7 He must acquire skill testing the performance of an electronic circuit fabricated on a printed circuit board making use of different electronic instruments.
 - 2.8 He must acquire skill in Help Desk Services, Server Management, Database / Security/ Web server Administration & Networking
3. Attitude:

3.1 He should have open minded approach while finding fault in the system.

3.2 He should have analytical approach while dealing with any problem.

3.3 He should be a keen observer while finding fault with the system and circuits.

1.4 He should have habit of reading commercial and technical literature regarding computer.

List of experts who contributed to Change the of curriculum of One Years Diploma Course in Computer Hardware and Networking held on 7.10.2015 and 8.10.2015 at N.I.T.T.R, Chandigarh.

1. Dr. Manish Gaur H.O.D. Computer Science & Engineering
I.E.T., Lucknow
2. Dr. A. B. Gupta Head CDC, NITTR, Chandigarh
3. ShriS.K.GuptaAsstt. Prof. CDC, NITTR, Chandigarh
4. Dr. Rakesh Kumar Asstt. Prof. CSE, NITTR, Chandigarh
5. Shri AmitDeogan Asstt. Prof. CSE, NITTR, Chandigarh
6. Shri M.P.SinghHOD(Mechanical),I.R.D.T.,Kanpur
Bhadauria
7. ShriLitle Kumar HOD(Electronics),I.R.D.T.,Kanpur
8. Km. Kalpana Devi Asstt.Prof.I.R.D.T.,Kanpur
9. Shri G. K. KanaujiyaLecturer(IT)I.R.D.T.,Kanpur

Workshops held on 25.07.2016 in which the suggestion, contribution and support of following experts is a matter of obligation to I.R.D.T.

1. Shri Arun Kumar HOD Computer Science Engg. GGP Jhansi
2. Shri Neeraj Kumar Lecturer IT GP Kanpur
3. Shri SumitBabu Lecturer CS GP Kanpur
4. Miss Puja saxena Lecturer IT GP Kanpur
5. Shri PrashantShakya Lecturer IT GP Mahoba
6. Shri GauravKishorKanaujiya Lecturer(IT)I.R.D.T.,Kanpur

List of Experts

List of experts who contributed the Review & Revision of curriculum of One Year Post Graduate Diploma Course In Computer hardware & Networking held on 22/09/2016 & 23/09/2016 at IRDT Kanpur:

- | | | |
|----------------------------------|-------------|------------------------|
| 1. Shri L. S. Yadav | Principal | G. P. Unnao |
| 2. Shri Mohd. Tariq | Principal | G.P. Auraiya |
| 3. Shri Shyam Lal | HOD, CS | G.P. Kanpur |
| 3. Shri Neeraj Kumar | HOD, IT | G.P., Ambedkar Nagar |
| 5. Shri Ashish Kanaujiya | Founder | Electron Kits, Lucknow |
| 6. Shri Shishir Kant Singh | M.D. | Seed Group, Lucknow |
| 7. Shri Gaurav Kanaujiya | Founder | Electron Kits, Lucknow |
| 8. Shri Kaushalendra Kumar | Lecturer CS | AITH, Kanpur |
| 9. Shri Sumit Babu | Lecturer CS | G.P. Kanpur |
| 10. Shri Gaurav Kishor Kanaujiya | Lecturer IT | IRDT Kanpur |

STUDY & EVALUATION SCHEME FOR ONE YEAR (TWO SEMESTER)
PG DIPLOMA IN
COMPUTER HARDWARE & NETWORKING
 (Effective from session)

I Semester

S.No	SUBJECT	PERIOD PER WEEK			EXAMINATION SCHEME								GRAND TOTAL
		L	T	P	THEORY				PRACTICAL				
					EXAMINATION		SESS MARKS	TOTAL MARKS	EXAMINATION		SESS MARKS	TOTAL MARKS	
					DUR	MARKS			DUR	MARKS			
1.1	COMPUTER HARDWARE & MAINTENANCE	--	--	06	--	--	--	--	03	90	40	130	130
1.2	OPERATING SYSTEM CONCEPTS	06	02	--	2.5	50	20	70	--	--	--	--	70
1.3	COMPUTER COMMUNICATIONS NETWORKING	06	--	06	2.5	50	20	70	03	90	40	130	200
1.4	DIGITAL ELECTRONICS & MEASURING INSTRUMENTS	06	--	06	2.5	50	20	70	03	90	40	130	200
1.5	STUDENT CENTER ACTIVITIES	-	-	2	-	-	-	-	-	-	-	-	-
TOTAL		18	02	20	-	150	60	210	-	270	120	390	600
		Games/NCC/Social and Cultural Activity + Discipline (15 + 10)											25
		TOTAL											625

II Semester

S.No	SUBJECT	PERIOD PER WEEK		EXAMINATION SCHEME								GRAND TOTAL	
		THEORY	PRAC	THEORY				PRACTICAL					
				EXAMINATION		SESS MARKS	TOTAL MARKS	EXAMINATION		SESS MARKS	TOTAL MARKS		
				DUR	MARKS			DUR	MARKS				
2.1	MICROPROCESSORS	06	04	2.5	50	20	70	03	60	40	100	170	
2.2	NETWORK ADMINISTRATION	06	06	2.5	50	20	70	03	90	40	130	200	
2.3	LINUX AND CLOUD NETWORKING	06	04	2.5	50	20	70	03	60	40	100	170	
2.4	PROJECT	--	08	--	--	--	--	VIVA	70	30	100	180	
	FIELD EXPOSURE	--	--	--	--	--	--		50	30	80		
2.5	STUDENT CENTER ACTIVITIES	-	2	-	-	-	-	-	-	-	-	-	
TOTAL		18	24	-	150	60	210	-	330	180	510	720	
		Games/NCC/Social and Cultural Activity + Discipline (15 + 10)											25
		TOTAL											745
		100% Carry Over of I Semester											625
		Grand Total											1370

NOTE: (1) Each period will be of 50 minutes duration.

(2) Each session will be of 16 weeks.

(3) Effective teaching will be atleast 14 weeks.

(4) Remaining periods will be utilised for revision etc.

(5) 2 Weeks structured & supervised branch specific task oriented industrial/field exposure to be organized at the end of session.. The students will submit a report. This will be evaluated at institution level for 30 marks & 50 by Project examiner for viva and report presented by the student.

1.1 COMPUTER HARDWARE & MAINTENANCE

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COMPUTER HARDWARE & MAINTENANCE LAB

1. Study various mother boards- non-integrated, semi-integrated, integrated
2. Understand the mother board component
3. Familiarize the different types of expansion slot (ISA, EISA, PCI, AMR, PCI-E).
4. Study the expansion cards namely add-on-cards (audio, graphics, i/o, tv tuner, etc).
5. Study different types of switch mode power supply – AT, ATX, NLX
6. Understand the power requirements for various components in a system
7. Study the different connectors and ports of a PC
8. Understand the various cables in a computer system
9. Familiarize the different types of memory modules.
10. Study various secondary storage- Floppy drive/Disk, Hard disk, Flash drive, CD.
11. Understand the internal structure of HDD, Flash drive, CD drive.
12. Understand the procedure of assembling a computer system.
13. Study the various techniques for formatting/partitioning.
14. Familiarize the hard disk partitioning using different tools.
15. Study the procedure for installing operating system – LINUX & Windows.
16. Familiarize the management of operating system components.
17. Exercise of DOS commands, UNIX, LINUX commands.
18. Study of various printers (Dot Matrix, Ink Jet, Laser, Multi Function).
19. Familiarize the interfacing of printers and installing driver software
20. Understand the interfacing, installation, working of various device such as Scanner, Projector, etc.
21. Understand the system Maintenance and trouble shooting.
22. Wi-Fi Concepts/Bluetooth concepts
23. Microprocessor socket types

1.2 OPERATING SYSTEM CONCEPTS

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S.NO.	Topics	L	T
1	Introduction	06	2
2	Types of OS	08	2
3	Disk Operating System	10	4
4	Windows	15	4
5	LINUX	15	4
6	Directory & File Structure	06	4
7	Memory Management	12	4
8	Scheduling	12	4
Total		84	28

1. **INTRODUCTION** : Need of OS Function/ services of OS.
2. **TYPES OF OS** : Batch processing, Multi programming, Multitasking, Time sharing, Distributed, Network, Real time, Multi processor system and Parallel processor.
3. **DISK OPERATING SYSTEM** : Booting process of DOS, Purpose of Batch file, Internal and External commands, Disk related commands – FDISK, CHKDSK, SCAN DISK, DEFRAG, etc.
4. **WINDOWS** : GUI, ICON, Toolbar, working with files, Installation of new software, Control panel, Explorer, Accessories, Network neighbourhood, System tools, Recycle bin, Files and Directory management.
5. **LINUX** : Structure, Kernel and Shell, Basic command, File system, VI editor, LINUX Installation
6. **Directory & File Structure**: File concepts, File system and structure, Directory structure
7. **Memory Management**: Main memory, Contiguous memory allocation, Segmentation, Paging, Virtual memory, Demand paging, Page replacement, Allocation, Threading.
8. **Scheduling**: Scheduling Concepts, Scheduling Algorithms (FIFO, Shortest Job First, Preemptive algorithms, priority based scheduling, round robin), multi level queue

1.3. COMPUTER COMMUNICATIONS & NETWORKING

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S.NO.	Topics	L	P
1	Basic Data Communication	4	-
2	Data Transmission	12	-
3	Transmission Media	12	-
4	Protocols & Architecture	8	-
5	Data Link	8	-
6	Local Area Network	12	-
7	Networking Devices	6	-
8	Network Layer	12	-
9	Transport Protocols	5	-
10	Wide Area Networks	5	-
Total		84	84

1. **BASICS OF DATA COMMUNICATION** :-Introduction, Types of Data , Difference of Data & Information.

2. **DATA TRANSMISSION** : Analog Transmission, Digital Transmission. Five Components of data transmission, characteristics of data communication. Modes of data Transmission- Simplex Half duplex / Full Duplex. Synchronus & Asynchronus Data Communication. Types of Network-LAN,MAN,WAN, Modulation – AM, FM, PM, QAM, Modem Wavelength multiplexing- FDM, TDM, WDM.

3. **TRANSMISSION MEDIA** : STP (Shielded Twisted Pair), UTP (Unshielded Twisted Pair) ,Coaxial Cable, Cabling Standards for LAN using UTP Cable, How to do Crimping, Building Straight Through Cable and Cross Cables, Testing Cable Continuity.

Twisted pair, Coaxial Cable, Optical Fibers, Wireless Transmission, Microwave, Radio Waves and their respective connectors, IEE standard, Wi-fi 802.11 Standards, Bluetooth Standards.

4. **PROTOCOLS AND ARCHITECTURE**: OSI reference models, TCP/IP Protocol suit.

5. **DATA LINK CONTROL AND PROTOCOL**: Flow Control - Stop and Wait, Sliding window, Error Detection, parity & CRC, Error correction, humming code, HDLC.

6. **LOCAL AREA NETWORK** : LAN architecture, LAN topologies - Bus/Tree LAN, Ring LAN, Star LAN, Wireless LAN, Ethernet and Fast Ethernet (CSMA/CD), Token Bus, token ring and FDDI.

7. **NETWORKING DEVICES**- Hub, switch, Bridge, Routers, Repeaters, gateways, Modems, Access Point

8. **NETWORK LAYER**- Introduction , Routers, Routing Algorithms, Congestion, Sub networking and Class Less Inter Domain (CCIDR),

NAT and PAT, Control algorithm, IP Addressing, DNS, Working of Internet- Web Server, Browser, HTTP, HTTPS, Web Services, Internet Architecture, IIS, Web Application. N/w Security – Cryptography.

9. **TRANSPORT PROTOCOLS:** Transport services, TCP, UDP.

10 **WIDE AREA NET WORKS:** WAN, Circuit switching, Packet switching, Frame relay, ATM, ISDN.

List of Practical's

1. To connect and built computers in different ways in a LAN (Topologies-star, ring, bus, tree)
2. To connect and understand different network devices used in LAN- Hubs, Switches, Routers, Bridges, Repeaters, Gateways, Modems.
3. To study the constructional details of transmission media- co-axial cables, twisted pair cables, optical fiber cable.
4. To create network cable using RJ 45 connectors.
5. Connections of two hubs by creating cross over connections.
6. To install a network interface card (NIC) and locate mac address of computer
7. To install TC/IP protocol and configure its advance property.
8. To Install network printer.
9. Installing IIS, making web server, web directory, connection via remote desktop, to know browsers.
10. To identify different problems and troubleshooting of network exm- no network, card problem, cable problem, IIS problem.

1.4 DIGITAL ELECTRONICS & MEASURING INSTRUMENTS

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S.NO.	Topics	L	P
1	Introduction to digital electronics	4	
2	Number system	4	
3	Codes and code conversion	4	
4	Logic gates	8	
5	Logic families and digital ics	10	
6	Encoder, decoders & display devices associated circuits	8	
7	Flip flops and counters	12	
8	Shift registers	8	
9	Memories	8	
10	A/d and d/a converters	6	
11	Basic measuring instruments	12	
Total		84	84

1. INTRODUCTION TO DIGITAL ELECTRONICS;

- 1.1 Basic difference between analog and digital Signal.
- 1.2 Application and advantages of digital signal processing.

2. NUMBER SYSTEM;

- 2.1 Binary, Octal and Hexadecimal number system; conversion From decimal octal and hexadecimal to binary and vice-versa.
- 2.2 Binary addition, subtraction, multiplication and division including binary numbers
- 2.3 1's and 2's complements method subtraction.

3. CODES AND CODE CONVERSION

- 3.1 The 8421 and excess-3 codes; mention of other popular BCD Codes
- 3.2 Addition of 8421, BCD coded numbers its limitations and Excess-3 coded numbers.

4. LOGIC GATES;

- 4.1 Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates.
- 4.2 Concept of negative and positive logic. Use of NAND and NOR Gate as universal gate.
- 4.3 Overview of Half Adder/Subtractor and Full Adder/ Subtractor (Block Diagram Only)

5. LOGIC FAMILIES AND DIGITAL ICS;

- Logic family classification:
- 5.1 Concept of Bipolar Logic, Diode Logic, Transistor Inverter, TTL logic, MOS, CMOS logic, ECL Logic

6. ENCODER, DECODERS & DISPLAY DEVICES ASSOCIATED CIRCUITS;

- 6.1 LED, LCD, seven segment display. Basic operation of various commonly used types.
- 6.2 Decoder circuits -for 7 segment display.
- 6.3 Basic decimal to BCD encoder circuits.
- 6.4 Basic Multiplexer and De multiplexer

7. FLIP FLOPS AND COUNTERS :

- 7.1. Brief idea of Flip-Flops and their operations. RS, T, D, JK, Master/Slave JK Flip Flop mention commonly used ICs Flip flops.
- 7.2 Counters and counters classification.
- 7.3 Familiarization with commercial TTL/CMOS counters ICs.

8. SHIFT REGISTERS;

- 8.1 Introduction and Basic concepts including shift left and shift right.
- 8.2 Serial In Serial Out

Serial In Parallel Out
Parallel In Serial Out
Parallel In Parallel Out

8.3 Universal shift register.

9. MEMORIES

9.1 Classification according to the following heads.

- (a) Volatile and non-volatile memories.
- (b) Random access memories and sequential access.
- (c) Semiconductor and non-semiconductor memories.
- (d) Destructive and non-destructive memories.

9.2 Semi-conductor ROMs, PROMs, EPROM, FLASH, SRAM. DRAM, structure and working of CCD. R/W memory.

10. A/D AND D/A CONVERTERS:

10.1 Use of A/D and D/A converters.

11. BASIC MEASURING INSTRUMENTS

11.1 Multimeters – Analog & Digital – Basic principles of measurement & specifications

11.2 Cathode Rays Oscilloscope – Block diagram & basic working, specification, Different uses of CRO, Different types of CRO – dual trace, storage (Brief introduction)

LIST OF PRACTICALS

- 1 Verification of truth table for 2 input NOT, AND, OR, NAND, NOR, XOR Gates.
- 2 To construct a 4- bit even/odd parity generator/checker using XOR gates and to verify their truth tables.
- 3 Verification of truth table for half adder and half subtractor
- 4 Verification of truth table for full adder.
- 5 To construct a full adder circuit with XOR and NAND gates.
- 6 To verify the truth table for J-K, M/S and D type, R-S F/F.
- 7 To decode a 3 line to 8 line encode from 8 line to 3 line and to observe input and outputs.
- 8 Measurement of voltage,. Frequency of a signal using CRO.
- 9 Different applications of a multimeter

IInd Semester
2.1 MICROPROCESSOR

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S.NO.	Topics	L	P
1	Overview of Microprocessor System:	8	
2	Memory of a Microprocessor	12	
3	C P U & CONTROL	12	
4	Introduction of 8085 Microprocessor	10	
5	Introduction of 8086 Microprocessor	10	
6	Assembly Language Programming	10	
7	Programmed I/O	8	
8	Memory Interfacing	8	
9	Advance Microprocessor and Micro Controllers	6	
Total		84	56

1. Overview of Microprocessor System:

1.1 Functional block.

(a) CPU

(b) Memory

(c) Input/output devices (Key Board, Floppy Drive, Hard Disk, Tape Drive, VDU, Printer, Flotter)

1.2 Concept of programme and data memory

(a) Registers(general purpose)

(b) external memory for storing data and results

1.3 Data transfer between registers.

1.4 Concept of tristate bus

1.5 Control on registers.

2. Memory of a Microprocessor

2.1 Concept of byte organized memory

(a) Address inputs.

(b) Address space

(c) Data input/output

2.2 Addressing and Address decoding

(a) Memory system organization

(b) Partitioning of total memory space into small blocks.

(c) Bus contention and how to avoid it.

2.3 Memory Chips

(a) Types of ROM, RAM, EPROM, PROM

(b) Read/Write inputs.

(c) Chip enable /select input

(d) other control input/output

- Address latching

- Read Output

- Address Strobes

(e) Power supply inputs.

2.4 Extension of memory

- In terms of word length and depth

3. CPU & CONTROL

3 General Microprocessor architecture.

3.1 Instruction pointer and instruction register

3.2 Instruction format

- Machine and Mnemonics codes.

- Machine and Assembly language

3.3 Instruction decoder and control action

3.4 Use of Arithmetic Logic unit

- Accumulator .

- Temporary Register

- Flag flip-flop to indicate overflow, underflow, zero result occurrence

3.5 Timing and control circuit

- Crystal and frequency range for CPU operation

- Control bus to control peripherals.

4. Introduction of 8085 Microprocessor

Evolution of Microprocessor , Register Structure , ALU, BUS organization , Timing and Control.

5. Introduction of 8086 Microprocessor

Internal organization of 8086, Bus interface unit, Execution unit, unit , register, organization, sequential memory organization, Bus cycle.

6. Assembly Language Programming

Addressing Modes, Data Transfer, Instruction, Arithmetic and Logic Instruction, Programme control instruction (Jumps, conditional Jumps, Subroutine Call) Loop and string instruction, assembly directives.

7. Programmed I/O

Programmed I/O , Interrupt Driven I/O, DMA, parallel I/O (8255 –PPI, centronics parallel port), serial I/O (8251/8250, RS- 232 standard) , 8259-Programmable Interrupt controller, 8237- DMA controller, 8253/8254- Programmable Timer/ Counter, A/D and D/A conversion.

8. Memory Interfacing:

Types of Memory, RAM and ROM interfacing with Timing consideration, DRAM interfacing.

9. Advance Microprocessor and Micro Controllers :

Pentium and Power PC

List of Practical's

1. Assembly language programming :- Programming of simple problems.

2. Simple programming problems using 8085 and 8086 microprocessor.
Trainer kit to gain competence in the use of

(a) 8085 and 8086 Instruction set.

(b) Support chips of 8085 and 8086.

2.2 NETWORK ADMINISTRATION

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S.NO.	Topics	L	P
1	Introduction	15	-
2	User & Group Managements	10	-
3	Domain User Account	10	-
4	Installing and Configuring Terminal Services	10	-
5	Installing DNS	10	-
6	Installing and Configuring DHCP	8	-
7	Configuring & Implementing routing Services	8	-
8	Planning implementing an OU structure	8	-
9	Local and domain security policies	5	-
Total		84	84

1. What is network administration and role of network administrator.
2. User & Group Managements, NTFS & share permissions. Using device manager, Drivers signing & signature verification. Managing Ports, Installing & Managing & configuring printers. Disk Management Tools & Tasks, File Systems, User Management. Installing Active Directory.
3. Domain user account, configuring user account properties. Domain groups. Viewing a user's effective permission. Creating and managing shares. Implementing files and folder NTFS & share permission, Special permission, inheritance. Implementing Shadow copies. Implementing and Managing the Distributed File system(DFS). Auditing Access to Resources.
4. Installing and Configuring Terminal Services. Managing servers remotely using terminal services (Remote desktop). Backup restoring data.
5. Installing DNS. Implementing DNS in windows 2003 networks.
6. Installing and configuring DHCP. Monitoring and Managing Internet information services (IIS 6.0) Remote Access server. Configuring & Implementing VPN. Configuring & Implementing Remote Access services.
7. Configuring & Implementing routing services. Configuring & implementing ICS. Active directory services. Implementing active directory services forest.
8. Planning implementing an OU(Organizational Units) structure. Implementing server roles. Restoring active directory.
9. Local and domain security policies. Working with group policy. Configuring the user environment by using group policy. Deploying software through group policy.

List Of Practical's

- 1.Installation & configuration of Windows OS (eg. Windows XP/Vista/7/8/10).
- 2.Installation & configuration of Windows server OS
- 3.Installing and Configuring Terminal Services
- 4.Installing DNS. Implementing DNS in windows Server networks.
- 5.Installing and configuring DHCP.
- 6.Configuring & Implementing routing services
- 7.Start and stop services of administration.

2.3 Linux & Cloud Networking

L **P**
6 **4**

S.NO.	Topics	L	P
1	Linux Networking-I	28	-
2	Linux Networking-II	30	-
3	Introduction to Cloud Computing & Virtualization	26	-
Total		84	56

Linux Networking-I

Configuring Basic Linux Networking, Managing Linux Server, Remote management using telnet, Secure Shell (ssh), DHCP server, Apache web server.

Linux Networking-II

Bind DNS server, Troubleshooting Linux Network

The Network File System (NFS), Samba Server, and Configuring Internet in Linux Systems.

Introduction to Cloud Computing & Virtualization

From Mainframe to cloud, benefits of cloud computing, grid computing, hardware virtualization, essentials of cloud characteristics, challenges, cloud economics, cloud types and service models, cloud computing platforms.

Concept of virtualization, storage system architecture in cloud computing, global risks and compliance aspects in cloud environment, data security risk.

List of Practical:

1. Perform Linux Installation
2. Creating Users, Groups and Examining Permissions
3. Perform Dual Boot Installation
4. Learning Linux File System Management
5. System Monitoring - Server - Client setup
6. Configuring NFS Server & Client
7. Installing & Configuring Samba Server
8. Perform File & Printer sharing
9. Configuring Apache Web Server
10. Perform Name based Virtual Hosting

11. Implementing Restriction through htaccess
12. Configuring Mail Server, SMTP Server, POP3 / IMAP Server
13. Setup and configuring - Static Routing

Books/references:

1. Windows Networking Basics, By Kenneth Gregg, published by IDG Books Worldwide
2. Microsoft Windows Networking Essentials by Darril Gibson

2.4.PROJECT

L P
- 08

GENERAL OBJECTIVE:

Purpose of the project work is :

- (i) To develop abilities of diagnosing problems.
- (ii) To develop the abilities to :
 - (a) Make literature survey.
 - (b) Design/develop/fabricate/test simple circuits.
 - (c) Prepare documents for electronic work.
 - (d) Work as a team.

1. COMPUTER SCIENCE PROJECT (SW/HW):

The student is expected to work on a project in consultation and acceptance with the instructor on either system software or hardware aspects related to industrial environment. The student is also expected to fabricate different cards used in PC, their testing and assembly of PC.

The end targets for the project should be well defined and evaluation should place major importance on meeting these targets.

2. NETWORKING PROJECT

The student is expected to work and learn from implementing an application software and study its functional and performance aspects and submit a report.

The evaluation must be based on the project report and the seminars.

Student Center Activities
(*Non-credit subject)

The purpose of this subject is to enhance the skills of students in following areas:

1. English proficiency
2. Level of academic knowledge
3. Presentation skills

To achieve above goals, small group of students or individual students with similar needs work independently.

SPACE REQUIREMENT

[A] ADMINISTRATIVE BLOCK

Sl. No.	Details of Space	Floor Area Sq. metres
1.	Principal's Room	30
2.	Confidential Room	10
3.	Steno's Room	6
4.(a)	Office including Drawing Office	80
(b)	Record Room	20
5.	Staff Room	
	(a) Head 1	15
	(b) Lecturer 10 sq.m./ Lect. for 4 Lecturers	40
6.	Library and Reading room	150
7.	Store	100
8.	Students Common room	80
9.	Model Room	90
10.	LRDC In Academic Block	100
11.	Seminar Room (One)	75

[B] ACADEMIC BLOCK

Sl.No.	Detail of Space Sq.m.	Floor Area
1.	Class Room -One	60
2.	Electronic Laboratory-One	120
3.	Digital Electronics & Microprocessor Lab-One	120
4.	Electronics Workshop & EIM Lab-One	120
5.	Computer H/w & Project Lab-One	120
6.	Computer Centre (Air Cond. Glass Partition and Special type pvc flooring and false ceiling), Two Computer Centers For Space of 60 Sq. m	120

[D] STUDENT'S AMINITIES

1. Hostel	40 %	of Strength of Students
2. Cycle Stand	50 %	of Strength of Students
3. Canteen and Tuck shop	50	Sq.m
4. N.C.C. Room	70	Sq.m
5. Dispensary	40	Sq.m
6. Guest Room(Attached Bath) incuding kitchen & store	45	Sq.m

[E] STAFF RESIDENCES

Sq.m		
1. Principal	1	100
2. Head of the Department	1	100
3. Lecturer	4	320
4. Non teaching & Supporting staff	8	480
5. Class IV	6	180

Priorty to be given in following order

(1)

- a. Administrative Building
- b. Labs
- c. Over head Tank
- d. Boundary Wall
- e. Principal Residence
- f. Forth Class Quarters (2/3)

(2)

- a. Hostel
- b. Students Aminities

(3)

Residences of employee

COMPUTER CENTRE

S.No.	DESCRIPTION	QTY.	APPROX. COST (in Rs.)
1.	Core-2 Quad Processor,4GB RAM, 1 GB SATA HDD, 19" TFT MONITOR,WLAN, OS-Windows 2007/2008/Latest Version	02 Server	1,20,000
2-	General Desktop Computer-Intel i5 or Higher, 2GB RAM,320 GB SATA HDD, 17" TFT/ LCD/LED Monitor, DVD Writer, Multi Media Kit with Speaker & Microphone Key Board - Multimedia Mouse - Optical Scrool or Latest 32 Bit PCI ETHERNET CARD(10/100) Mbps Internal Modem, Pen Drive 16GB Pre loaded Windows 2007/2008/Latest Pre loaded latest Anti Virus with Life time Subscription,licence media and manual with UPS 660 VA	60 Node	36,00,000
	OR		
	Computer of latest Specification		
3.	Lap Top (Latest Version) With damage warranty & 3 hrs.backup battery	04	Rs 250000
4.	Software :(WithLicence)		LS
i.	ORACLE 11i/My SQL 5.5 or Latest Windows based 30 USERS) & Development (Latest)		
ii.	VISUAL STUDIO (professional 2012)		
iii.	MS OFFICE 2010		
iv.	COMPILER -'C',C++, JAVA-7		
v.	Unix & Linux -Red Hat/UBUNTU/Fedora orlatest withlicence for 30 users		
vi.	Page Maker, Corel Draw(full package),Adobe Reader, Adobe Dream WeaverCS6,FlashPhotoshop,Net Beams Personal Web Server,HTML,IIS.		
vii.	Tally.ERP9		
3.	Hardware		Rs. 5,00,000. (LS)
i.	Switch-32 Port	02	
ii.	Router	02	
iii.	Hub	04(08 Port)	
iv.	Ext.Modem	02	
v.	Wireless N/W Adaptor	02	
vi.	Series Access Point	02	
vii.	LAN cable meter	05	
viii.	LAN cable analyzer	05	
ix.	LAN trainer board	05	
x.	DATA communication trainer board	05	
xi.	Crimping Tool	15	
	And all other accessories related to Networking.		

4.	Scanner- Flat Bed A4/Auto lighter (bit depth 48)	02	Rs 20000.00
5.	132 Column 600 CPS or faster 9 Pin dot matrix printer with 500 million character head life	02	Rs 50000.00
6.	Laser Jet-A4,All In One 20 page per min(2 Each)	04	Rs. 10000.00
7.	Desk Jet-A4, Photo Smart(2 Each)	04	Rs 40000.00
8.	5 KVA on line UPS with minimum 30 minute battery backup along with sealed maintenance free batteries. Provision for connecting external batteries with network connectivity. (For 2 Labs)	04	Rs 800000.00
9.	Split Air Conditioner 1.5 tones capctity with ISI mark alongwith electronic voltager stablizer with over voltage and time delay circuit	08	Rs. 350000.00
10.	Room preparation and furniture	LS	
11.	19" rack, 24-port switch, connector RJ-45 Cat-6 cabling for network	LS	Rs 100000.00
12.	2 KVA Inverter Cum UPS	02	Rs 60000.00
13.	Digital Camera latest version	01	Rs 20000.00
14.	Fire Extinguisher (2 Kg.)	04	Rs 15000.00
15.	Fire Extinguisher (5 Kg.)	04	Rs 25000.00
16.	Vaccum Cleaner	02	Rs 25000.00
17.	LCD Projector 3000 lumen with all accessories	02	Rs 350000.00
18.	Pen drive 16 GB	10	Rs 10000.00
19.	DVD writer External	02	Rs 10000.00
20.	HDD External 500 GB	02	Rs 15000.00
21.	PDA (Latest Configuration)	02	Rs 15000.00
22.	Broadband For Internet(Speed Min. 8mbps)	04	LS
23.	USB Modem	02	Rs 8000
24.	Generator 15 KVA Water Coolent	01	Rs. 450000.00

NOTE : All the above items should be equally distributed in the 2
computercentres

HARDWARE MAINTENANCE & PROJECT LAB

S.No.	Description	Qty.	Approximate Cost.
1	Digital Multimeter 3 ½ to 4 ½ digit, 1000volt D.C.2 mega ohm range, Resistance, capacitance, freq., diode, transistor, continuity testing, AC/DC change	15	Rs. 55,000.00
2	Power Supply Regulated/transistorized 0-30 volt	15	Rs. 50,000.00
3	Intel i5 or higher Processor 2 GB RAM, 320 GB HDD, or Higher, CD/DVD Drive	15	Rs. 10,00,000.00
4	Printer (600 cps) a) Dot Matrix b) Desk Jet c) Laser	03 each	Rs. 2,00,000.00
5	Constant Voltage Transformer	5	Rs. 50,000.00
6	PC Card Sets (One Mother Board, 4 Cards)	5	Rs. 50,000.00
7	Spike Booster, LAN Tester	15	Rs. 20,000.00
8	Trainer Board i-To demonstrate assembly & working of multimedia computer system ii- To study mother board with different chip set and processor iii-To study Hard Disk (SATA/IDE) iv-To Study construction & working of TFT/LCD/LED monitor v- To study dot-matrix, Ink Jet, Laser Jet printer	05 set of each board	Rs. 5,00,000.00
9	Tool Kit	15	Rs. 75,000.00

ELECTRONICS LABORATORY

1Basic Electronic Lab.

S.No.	Name of the Equipment/ Board/Kit Etc. Lab.	Elex. Components & & Devices .		Rate per Piece	Total Cost	
					In Rs.	Intake
		30	60	30		60
1.	Auto Oscillator	2	4	2000	4000	8000
2.	Multimeter, 20 K. Ohm per volt Sensitivity, q1% accuracy d.c voltage 2500 v. max.	2	4	1000	2000	4000
3.	Digital Elex. multimeter.	7	12	3000	2100	36000
4.	Regulated Power Supply 0-30 V, 0.5/1 Amps.	5	10	2000	10000	20000
5.	Dual Power Supply 0-30 V, 1Amps	2	4	2500	5000	10000
6.	Power Supply 0-300 Volt	-	-			
7.	C.R.O. (0-10 MHz)	2	4	10000	20000	40000
8.	Dual Trace C.R.O. (0-10 MHz)	1	3	15000	15000	45000
9.	R.F.Signal Generator	-	-			
10.	Function Generator	-	-			
11.	A.C. Millivolt Meter (Elex.)	-	-			
12.	Out Put Audio Power Meter 215 K - 20 K & 1 MW - 10 MW	-	-			
13.	A.C. Milliammeter/A.C. Micro- meter & A.C. Millivoltmeter (Suitable range)	4	8	500	800	4000
14.	D.C. Voltmeter /D.C. Milliamme- ter/D.C. Micrometer (suitable range)	20	40	500	4000	20000
15.	Decade Resistance Box (Different ranges)	-	-			
16.	Decade Capacitor Box (Different range)	-	-			
17.	Decade Inductance Box	-	-			

18.	Different Transducers : pressure type, thermo couple, LVFT, Opto pick electromagnetic pick up; Thermal relay, ultra- sonic pick up and potentiometer etc. including strain gauge	-	-				
19.	Experimental Kit/ Teaching Modules/ Training boards/ Learning kits. of relevant subject.	30	60		--		
20.	Component Storage rack	2	4		--		
21.	Consumable Items	LSLS			--		
22.	Miscellaneous	LSLS			--		

Fundamentals of Digital Electronics & Microprocessor Lab

S.No.	Name of the Equipment/ Board/Kit Etc.	Principles of Digital		Micropro- cessors&		Total		Total No.		Rate per	Total Cost	
		Eltx.	Lab.	Applicat-	ion Lab.	ded		Recommen-	Piece	@ Rs.	Intake	
		30	60	30	60	30	60	30	60		30	45
1.	CRO dual trace with delayed time base, 25 MHz or higher band width.	1	2	-	-	1	2	1	2	25000	25000	50000
2.	CRO dual trace 15 MHz.	1	2	-	-	1	2	1	2	15000	15000	30000
3.	CRO dual trace 10 MHz.	2	2	1	2	3	4	3	4	10000	30000	40000
4.	Multimeter, 20 K Ohm/volt sensitivity, 1% accuracy in D.C. voltage range, Max. D.C. voltage range 2500 V, A.C Current.	2	3	-	-	2	3	2	3	2500	5000	7500
5.	Multimeter, Digital hand held 3 1/2 digit, 0.3% accuracy 1000 VD.C. and 20 m ohm resistance range protected against transients.	2	3	1	2	3	5	3	5	2000	6000	10000
6.	Logic Probe	15	30	5	10	20	25	20	30	300	6000	9000
7.	Logic board/trainer including +5 Volt, 1Amp q15 V, 0.3 Amp. power supply and bread board and flexible leads.	10	14	-	-	10	14	10	14	3500	35000	49000

8.	Microprocessor trainer kits with 8085 system (EC 85 or similar).	-	-	8	10	8	10	8	10	8000	64000	80000
9.	Component rack 144 tray (small) & 24 large tray.	2	2	1	1	3	3	3	3	5000	15000	15000
10.	Consumable material such as components ICs, resistors transistors etc.	LS	LS	LS	LS	LS	LS	LS	LS	--	50000	60000
11.	Miscellaneous	LS	LS	LS	LS	LS	LS	LS	LS	--	40000	45000

4.ELECTRONICS WORKSHOP

5.ELECTRONIC INSTRUMENTS AND MEASUREMENTS LAB

S.No.	Name of the Equipment/ Board/Kit Etc.	Electronics Work-Shop		Electronics Inst. & Measurements Lab		Total		Total No. Recommended		Rate per Piece	Total Cost	
		Intake 30	45	Intake 30	45	Intake 30	45	Intake 30	45	In Rs.	Intake 30	45
1.	D C Voltmeter (1K/2K/10K/20K Ohm per Volt)	-	-	4	4	4	4	4	4	200	800	800
2.	Gen.purpose multimeter	2	3	2	3	4	6	3	4	1000	4000	
3.	Electronic multimeter	2	3	3	4	5	7	3	5	2500	15000	
4.	IC regulated power supply 0-15 V; 1 A	1	1	2	3	3	4	2	3	1500	3000	4500
5.	Transistor power supply 0-30 V / 1 A variable.	1	1	1	2	2	3	2	2	2000	4000	4000
6.	Unregulated power supply 0-30 V; 1 A	1	1	1	1	2	2	1	1	1000	1000	1000
7.	A.F. signal generator.	2	3	4	5	6	8	3	4	1500	4500	6000
8.	RF signal generator	2	3	5	6	7	9	4	5	2500	10000	12500
9.	Function Generator	1	2	1	2	2	4	1	2	3000	3000	6000
10.	Std. Signal Generator	2	3	1	1	3	4	1	2	5000	5000	10000
11.	AC/DC Voltmeter (M.I.type)	-	-	2	4	2	4	2	4	200	400	800
12.	Sensitive multirange ammeter	-	-	1	2	1	2	1	2	500	500	1000
13.	Calibrated CRO (Single beam 10 MHz)	-	-	1	2	1	2	1	2	15000	15000	30000
14.	Dual trace Cal. CRO 10 MHz	1	2	2	3	3	5	2	3	20000	4000	6000

15.	Q Meter	-	-	1	2	1	2	1	2	5000	5000	10000
16.	RLC/Universal Bridge	-	-	1	2	1	2	1	1	4000	4000	4000
17.	Universal Digital Freq. Counter	-	-	1	2	1	2	1	1	10000	10000	10000
18.	Distortion Factor Meter	-	-	1	1	1	1	1	1	6000	6000	6000
19.	Decade Resistance Box	-	-	1	2	1	2	1	1	1000	1000	1000
20.	Decade Cap. Box	-	-	1	2	1	2	1	1	1500	1500	1500
21.	Std. Inductance (Diff. Value)	-	-	4	6	4	6	4	6	200	800	1200
22.	Charts, Models, displays for safety/rules etc.	LS	LS	-	-	LS	LS	LS	LS	--	2000	2000
23.	Digital Multimeter	1	2	3	3	3	5	2	4	4000	8000	16000
24.	Single Phase Variac 5 Amp, 15 Amp (Oil/Air cool)	4	5	1	2	5	7	5	6	1500 av.	7500	9000
25.	Gen. Purpose CRO; 5 MHz.	1	2	-	-	1	2	1	1	10000	10000	10000
26.	Tools Kit (SET)	15	15	-	-	15	15	15	15	30000	4000	5000
27.	Misc. Active Components	LS	LS	-	-	LS	LS	LS	LS	--	8000	10000
28.	Misc. Accessories as per req.	LS	LS	-	-	LS	LS	LS	LS	--	2000	3000
29.	Misc. Passive components.	LS	LS	-	-	LS	LS	LS	LS	--	3000	4000
30.	Working Models of analog and digital equipment	LS	LS	-	-	LS	LS	LS	LS	--	5000	8000
31.	Drill Machine with stand	1	2	-	-	3	5	2	3	2000	4000	6000
32.	Misc. Items & Consumable	LS	LS	-	-	LS	LS	LS	LS	--	40000	60000

7. LEARNING RESOURCE MATERIALS

1.	LCD Projector with Screen	1	--	20000
2.	Handicam	1	--	30000
3.	Cutting, Binding & Stitching equipment.	1	--	30000
4.	Desk Top Computer with Internet Core i5/i7- 760, Processor, Genuine Windiw 7, Professional 18 inch HD, Flat Panel Monitor Optical Mouse, Key Board & all related media or latest version	1	--	40000
5.	Home Theater Support Disc type CD. CDR/CDRW DVDR/DVDRW, VCD Supported with USBPort Support-DIVX/JPEG/MP3	1	--	25000
6.	Commerical P A System 16 W-220W output, AC & 24V DC Operated, 5 Mic.& 2 Auxilary input, Speaker output 4 Ohm, 8 Ohm, 17 V & 100 V	1	--	20000
7.	Interactive Board	1	--	50000

Note :

1. This center will be only one at the institute level irrespective of all branches.

1ANNEXURE-QUESTIONNAIRE

INSTITUTE OF RESEARCH,DEVELOPMENT AND TRAINING U.P.KANPUR -208024

SUBJECT: Questionnaire for ascertaining the job potential and activities of PG diploma holder in Computer Hardware & Networking.

PURPOSE: To design and develop one Year (Two Semester)PG diploma curriculum in Computer Hardware & Networking

NOTE: 1.Please answer the questions to the points given in the questionnaire.
2.Any other point or suggestion not covered in this questionnaire may be written on a separate paper and enclosed with the questionnaire.

1.Name of the organisation:_____

2.Name& Designation of the officer _____
filling the questionnaire _____

3.Name of the department/section/ _____
shop _____

4.Importent functions of the _____
department/section/shop _____

5.Number of diploma holder employees
under your charge in the area of _____
Computer Hardware& Networking.

6.Please give names of modern equipments/machines handled by a diploma holder in Computer Hardware & Networking.

- | | | |
|----|----|----|
| 1. | 2. | 3. |
| 4. | 5. | 6. |

7.What proficiencies are expected from a diploma holder in Computer Hardware& Networking.

- | | | |
|----|----|----|
| 1. | 2. | 3. |
| 4. | 5. | 6. |

8.Mention the approximate percentage of the following desired in Diploma teaching.

Approved by BTE , meeting Held on date 04.05.20137

- 1. Theoretical knowledge -----%
- 2. Practical knowledge -----%
- 3. Skill Development -----%

9. Do you think " on the job training" / Industrial training should form a part of curriculum. (Yes/ No)
if yes then

- (a) Duration of training -----
- (b) Mode of training
 - 1. Spread over different semesters
 - 2. After completion of course
 - 3. Any other mode

10. What mode of recruitment is followed by your organisation.

- 1. Academic merit
- 2. Written test
- 3. Group discussion
- 4. Interview
- 5. On the job test.

11. Mention the capabilities/ Qualities looked for while recruiting diploma holder in Computer Hardware & Networking.

- (a) Technical knowledge -----
- (b) Practical skill -----
- (c) Etiquettes and behaviour -----
- (d) Aptitude -----
- (e) Health, habit and social background -----
- (f) Institution where trained -----

12. Does your organisation have any system for the survey of Home articles of different countries/States. Yes/No

13. Does your organisation conduct field survey to know users views regarding. Yes/No

- 1. Home Articles for different age groups and sex.
 - 2. Effect of climatic conditions
 - 3. Any other
- If yes ; Please give brief account of each.

14. Which type of assignment do you suggest for an entrepreneur in Computer Hardware & Networking.

15. In which types of organisations can a diploma holder in Computer Hardware & Networking can work or serve.

- | | | |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |

16. Job prospects for the diploma holder in Computer Hardware & Networking the next ten years in the state / country.

17. In your opinion what should be the subjects to be taught to a diploma student in Computer Hardware & Networking.

Theory	Practical
18. Kindly mention particulars regarding topics/areas which should be given more emphasis in the curriculum .	

Theory	Practical
19. Kindly state whether your organisation can contribute towards improvement of curriculum in above field.	
Yes/ No	
If yes : Please give names of experts in your organisation to whom contact.	

20. Kindly give your valuable suggestions for being considered at the time of finalisation of curriculum.

21. What changes in technologies are to be incorporated in the development of curriculum in Computer Hardware & Networking.

(Signature)

Kindly mail the above questionnaire duly filled to:-

Gaurav Kishor Kanaujiya
Lecturer-IT
Institute of Research, Development & Training, U.P.
Kanpur-208024

(Please note that all information in this survey is confidential for the use of curriculum design only)

2ANNEXURE- FIELD EXPOSURE SCHEDULE

All the students after annual examination will undergo industrial training for a period of two week in Industries dealing with computers. It will in all respect end by the end of summer vacation. Project examination will be held after training It will be arranged and supervised by institute staff. The performa for preparing a report of his stay there in the industry given below can be taken as a guide for the purpose.

1. Name & Address of the organisation
2. Nature of the industry and its activity.
3. Date of
 - i. Joining
 - ii. Leaving
4. Details of the sections of the industry visited.
 - i. Name of tools, equipments instruments in use.
 - ii. Activities of the section
 - iii. Study of the components, devices used in complete assemblies.
 - iv. Soldering and de-soldering techniques used in circuit fabrication.
 - v. Study of PCB Lay out developing and preparation.
 - vi. Checking and testing of the components used.
 - vii. Final checking of the product.
 - viii. Description of quality control measures taken in industry.