

**FACULTY OF ENGINEERING & TECHNOLOGY**

**SYLLABUS**

**FOR**

**DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE  
(SEMESTER – I & II)**

**SESSION: 2019–20**



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**GURU NANAK DEV UNIVERSITY  
AMRITSAR**

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DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER SYSTEM)

**Course structure:**

**(i) Basic Course: (6-month)**

**(ii) Diploma: (6-month+ 6-month = 1 year)**

The Diploma comprises Sr. No. (i) and (ii) as above

The students of Diploma have to clear all the three examinations viz.

- i) after six months from the enrolment session
- ii) after one year from the enrolment session and

**Eligibility:** The admission shall be open to a candidate who has passed 10+2 (Non-Medical) examination with at least 40% marks in aggregate.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER SYSTEM)

**Course Scheme**

Subject Code	Skill Component / General Education	Subject Name	Hours per week			Credits	Total Marks	
							Th.	Pra.
<b>Semester-I (Total Marks: 500)</b>			<b>L</b>	<b>T</b>	<b>P</b>			
<b>Paper – 1</b>	General Education	<b>Communication Skills-I</b>	2	0	3	6	40	60
<b>Paper – 2</b>	General Education	<b>Computer Fundamentals-I</b>	2	0	3	6	40	60
<b>Paper – 3</b>	Skill Component	<b>Computer Hardware</b>	2	0	3	6	40	60
<b>Paper – 4</b>	Skill Component	<b>PC Maintenance and Troubleshooting – I</b>	2	0	3	6	40	60
<b>Paper – 5</b>	Skill Component	<b>Computer Assembling and Installation</b>	2	0	3	6	40	60
			<b>25</b>			<b>30</b>		

<b>Semester-II (Total Marks: 500)</b>								
<b>Paper – 6</b>	General Education	<b>Communication Skills-II</b>	2	0	3	6	40	60
<b>Paper – 7</b>	General Education	<b>Computer Fundamentals-II</b>	2	0	3	6	40	60
<b>Paper – 8</b>	Skill Component	<b>Network Operating Systems</b>	2	0	3	6	40	60
<b>Paper – 9</b>	Skill Component	<b>PC Maintenance and Troubleshooting – II</b>	2	0	3	6	40	60
<b>Paper – 10</b>	Skill Component	<b>Principles of Data Communications and Network Maintenance</b>	2	0	3	6	40	60
			<b>25</b>			<b>30</b>		

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**PAPER – I: COMMUNICATION SKILLS-I  
(THEORY)**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Theory Marks: 40**

**Practical Marks: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION A**

**Writing Skills**

Formatting personal and business letters:

1. Standard informal personal letters such as letters to parents, friends, social pillars.
2. Standard formal letters to Govt. Officers, superiors, utility purposes, News Paper Editors etc.
3. Standard Business Letters: Introducing and Promoting business activities, Placing an order, Cancelling an order, Reporting defects in receipt of ordered goods, Reporting delay in receipt of ordered goods, Responding to delay in supply of goods and services, Maintaining good customer relationships, Making customers give feedback to your services, Creating catalogue of your goods and services, Acknowledging services rendered by others,

**SECTION B**

1. Resume Writing.
2. Writing of memos, notices and customer-friendly information.
3. Basic punctuation.
4. Blog writing

**SECTION C**

**Speaking Skills**

1. Using courtesy words and expressions
2. Storing standard day to day usages sentences, words and expressions in mind.
3. Creating similar new sentences
4. Using declarative, imperatives, interrogative and exclamatory sentences.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**SECTION D**

1. Speaking catchy phrases , proverbs and expressions
2. Differentiating confusing words
3. Making PowerPoint presentation
4. Making short speech
5. Group Discussion/ Conversation

**Suggested Readings/ Books:**

1. KK Ramchandran, et al Business Communication, Macmillan, New Delhi
2. Swati Samantaray, Business Communication and Communicative English, Sultan Chand, New Delhi.
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
4. Computer Mediated Communication 1st Edition by Crispin Thurlow Lara Martin Lengel , Alice Tomic.
5. Collins, Patrick. Speak with Power and Confidence. New York: Sterling, 2009.
6. Fitikides, T. J. Common Mistakes in English. London: Orient Longman.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**PAPER – I: COMMUNICATION SKILLS-I  
(PRACTICAL)**

**Instructions** for Practical Exam: Entire syllabus will be covered for practical.

1. Speaking Skills
2. Using courtesy words and expressions
3. Storing standard day to day usages sentences, words and expressions in mind.
4. Speaking catchy phrases , proverbs and expressions
5. Making PowerPoint presentation
6. Making short speech
7. Group Discussion/ Conversation

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**PAPER – II: Computer Fundamentals-I  
(THEORY)**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Theory Marks: 40**

**Practical Marks: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION A**

**Interacting with the computer:**

**Computer Components/ Input/ Output Devices:** Input devices; keyboard, mouse, scanner, output devices; VDU and printer (impact and non-impact printers), plotter etc. Primary and secondary storage (auxiliary storage), secondary storage; magnetic disks – tracks and sectors, optical disk (CD, CD-RW and DVD memory).

**Computer Software concept:** System software, application software, operating systems, and advantages of software and application packages. Introduction to operating systems such as ms-dos and windows, difference between dos and windows

**Operating system-MS-Windows**

Operating system-Definition & functions, basics of Windows, Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders, Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance, Using windows accessories.

**SECTION B**

**Word Processor using Microsoft Office**

Introduction to Word, Introduction to Parts of Word Window (Title Bar, Menu Bar, Tool Bar, The Ruler, Status Area), Page Setup, Creating New Documents, Saving Documents, Opening an Existing documents, insert a second document into an open document, Editing and formatting in document, Headers and Footers, Spell Checking, Printing document, Creating a Table Using the Table Menu and table formatting, Borders and Shading, Templates and Wizards, Mail Merge, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering, Headings, styles, fonts and font size Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers , book marks, symbols and dates.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**SECTION C**

**Presentation Software using Microsoft Office**

Introduction to MS Power point, Power point elements, Templates, Wizards, Views, Exploring Power Point Menu, Working with Dialog Boxes, Adding Text, Adding Title, Moving Text Area, Resizing Text Boxes, Adding Art, Starting a New Slide, Starting Slide Show, Saving presentation; Printing Slides, Views (View slide sorter view, notes view, outlines view) Formatting and enhancing text formatting, Creating Graphs (Displaying slide show and adding multi – media)

**SECTION D**

**Spreadsheet using Microsoft Office**

Elements of Electronics Spread Sheet and Ms-Excel: Application/usage of Electronic Spread Sheet, Opening of Spread Sheet, and menu bar, Creation of cells and addressing of cells, Cell inputting.

Manipulation of cells: Enter texts numbers and dates, Creation of tables, Cell Height and Widths, Copying of cells.

Functions: Using functions: mathematical, statistical and financial function.

Spread sheets for Small accountings: Maintaining invoices/budgets, Totaling of various transactions, maintaining daily and monthly sales reports.

Charts: drawing different types of charts.

**Reference Books:**

1. Andrew S. Tanenbaum, David J. Wetherall Computer Networks (5th Edition), PHI.
2. P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers.
3. A. Goel, Computer Fundamentals, Pearson Education.
4. Will Train, Gini Corter, Annette Marquis “Microsoft Office” BPB



DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**PAPER – II: Computer Fundamentals-I  
(PRACTICAL)**

**Instructions** for Practical Exam: Entire syllabus will be covered for practical.

**1. Operating system-MS-Windows**

Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders, Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance, Using windows accessories.

**2. Word Processor using Microsoft Office**

Parts of Word Window (Title Bar, Menu Bar, Tool Bar, The Ruler, Status Area), Page Setup, Creating New Documents, Saving Documents, Opening an Existing documents, insert a second document into an open document, Editing and formatting in document, Headers and Footers, Spell Checking, Printing document, Creating a Table Using the Table Menu and table formatting, Borders and Shading, Templates and Wizards, Mail Merge, importing, exporting and inserting files, formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering, Headings, styles, fonts and font size Editing, positioning and viewing texts, Finding and replacing text, inserting page breaks, page numbers, book marks, symbols and dates.

**3. Presentation Software using Microsoft Office**

Power point elements, Templates, Wizards, Views, Exploring Power Point Menu, Working with Dialog Boxes, Adding Text, Adding Title, Moving Text Area, Resizing Text Boxes, Adding Art, Starting a New Slide, Starting Slide Show, Saving presentation; Printing Slides, Views (View slide sorter view, notes view, outlines view) Formatting and enhancing text formatting, Creating Graphs (Displaying slide show and adding multi – media)

**4. Spreadsheet using Microsoft Office**

Elements of Electronics Spread Sheet and Ms-Excel: Opening of Spread Sheet, menu bar, Creation of cells and addressing of cells, Cell inputting.

Manipulation of cells: Enter texts numbers and dates, Creation of tables, Cell Height and Widths, Copying of cells.

Functions: Using functions: mathematical, statistical and financial function.

Spread sheets for Small accountings: Maintaining invoices/budgets, Totaling of various transactions, maintaining daily and monthly sales reports.

Charts: drawing different types of charts.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – I)

**Paper–3: COMPUTER HARDWARE**

**Time: 3 hours**

**M. Marks: 100**  
**Theory: 40**  
**Practical: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

**Motherboards**

Introduction – Functions – Types – Forms Factors – Modern Motherboards – Sockets – Slots – Motherboards 440BX-810, 810E, 815, 815E-820-Athlon – P4 – Dual PIII – Maintenance

**Supporting chips:** Introduction – Types – Clocks Generator – Bus Conductor – PIC-DMAC-PIT-PPI-RTC

**SECTION-B**

**Memory:** Introduction – Organization – Primary – Secondary – DRAM – SRAM-Modules – SIMM – SIPP – DIMM – Asynchronous DRAM – Synchronous DRAM – Memory Requirement – Memory Upgrade – Errors – Parity Checking – Trouble shooting

**SECTION-C**

**Logical Memory:** Introduction – Real Mode Memory – Conventional Memory – UMA – Extended Memory – HMA – EMS – ROM – Shadowing – Optimization – Performance Improvement

**SECTION-D**

**Display Adapters:** Introduction – Display Subsystem – Evolution – Types – Components – Interfaces – Modes – MDA – CGA – EGA – VGA – PGA – XGA – SVGA – VESA – SVGA Standardization

**Graphic Accelerators:** Introduction – Cards – Accelerated Graphic Ports – 3D Cards – Upgrading – Troubleshooting

**References:**

1. Upgrading and Repairing PCs by Scott Mueller.
2. PC Hardware: The Complete Reference by Craig Zacker

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**Paper - 4: PC MAINTENANCE and TROUBLESHOOTING – I**

**Time: 3 hours**

**M. Marks: 100**

**Theory: 40**

**Practical: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

**PC Upgrading:** Introduction – Upgrade Essentials – Performance Upgrade – Capacity Upgrades – Features Upgrades – Repair Upgrades

**BIOS:** Typical Motherboard BIOS, BIOS Features, BIOS and Boot Sequences, BIOS Shortcoming and Compatible Issues, BIOS Troubleshooting, BIOS Upgrades.

**SECTION-B**

**Preventive Maintenance:** Introduction – Need – Tools – Materials – Procedures – Active Hardware Maintenance – Active Software Maintenance – Passive Maintenance Procedures – Heat and Temperature Control – Dust and Pollution control – Ventilation Control – EMI – Electrostatic Discharge Control – Humidity and Corrosion Control – Shock and Vibration Control – Preventive Maintenance Schedule

**SECTION-C**

**General PC Troubleshooting:** Introduction – Types of PC Faults – Solid Faults – Intermittent Faults – Developing Strategy – Diagnostic and Repair Tools – Diagnostic Software Tools – Diagnostic Hardware Tools – Advanced Testing Tools – Hand Tools for Service Engineers – Disassembling PC

**SECTION-D**

**Hard Disk:** Introduction, Disk Basics, Disk Performance and Characteristics, Drive, Construction, Drive Testing and Troubleshooting.

**References:**

1. Upgrading and Repairing PCs: Muller – Prentice Hall – 10th Edition, 2000.
2. Complete PC Upgrade and Maintenance Guide: Mark Minasi–BPB Publishers 15th Edition, 2004.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**Paper–5: COMPUTER ASSEMBLING AND INSTALLATION**

**Time: 3 hours**

**M. Marks: 100**

**Theory: 40**

**Practical: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

**Computer Assembling:** Introduction – Overview of Parts of PC – Cabinet – Motherboards – Video Cards – Sound Cards – Modems – Hard Drive – Zip Drive – CD ROM Drive – Network Card – Interfaces – CPU – Main Memory – Power Supply

**Setting up the Motherboard:** Installing CPU – Setting the Clock Speed – Installing the Memory

**Installing Video Card:** Testing – Plug in the Video Card – Providing Power to the Motherboard – Testing

**SECTION-B**

**Installing Floppy Drives:** Installing Hard Disk Drives – Installing the CD ROM Drive – Installing Key Board and Mouse Installing Sound Card Installing Modem

**Installing the Motherboard:** Installing the Power Supply – Attaching Add-on cards – Installing the Drives – Testing – Parallel and Serial Port Connection – Front Panel Indicators and Speakers – Troubleshooting

**SECTION-C**

**Operating System Installation**

**BIOS:** Introduction – Features – Developers – Identification – Interrupts – Disk Services – Serial Port Services – Video Services – Printer Screen Services – Flash Memory –BIOS Upgrade – Troubleshooting

**CMOS setup:** Introduction – Standard CMOS Setup – Advanced CMOS Setup – Advanced Chipset Setup – Power Management Setup – PNP/PCI Setup – Peripheral Setup – Auto Detect IDE Device – CPU Frequency / Voltage Control – CPU PNP Setup – Password Settings – Auto Configuration – Exit Options – BIOS Optimization – Maintenance – Troubleshooting

**SECTION-D****Power On Self Test (POST)**

**Partitioning and Formatting:** Introduction – Low Level Formatting – IDE Drives – SCSI Drives – Partitioning - Options – Efficient Partitions – Clusters – FAT 16 – FAT 32 – NTFS – FDISK – Steps for Partitioning – Logical Drives – Primary Partition – Extended Partition – Partitioning Large Drives – Backing up Partition Information – Bad Sectors – Scan Disk – Third Party Partitioning and Formatting Tools – Troubleshooting

**Top Level View of Computer Function and Interconnection:** Interconnection structure, Bus interconnection.

**References:**

1. PC Upgrade and Maintenance Guide: Mark Minasi. – BPB Publishers – 15th Edition 2004
2. Computer Fundamentals – P.K. Sinha.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**PAPER – 6: COMMUNICATION SKILLS-II  
(THEORY)**

**Time: 3 Hrs.**

**Max. Marks: 100  
Theory Marks: 40  
Practical Marks: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION A**

**Reading Skills**

1. News paper reading skills
2. Content reading through internet sources
3. Comprehension Passages

**SECTION B**

**Listening Skills**

1. Receiving voice calls
2. Attending active phone calls and responding
3. Daily news listening exercises (Audio and Video)
4. Note taking
5. Listening to native speakers conversations.

**SECTION C**

**Common mistakes**

1. How to avoid common mistakes in: Nouns, Pronouns, Adjectives, Adverbs, Prepositions, word usage, helping verbs, verbs, phrases, clauses and sentences

**Foreign Words**

1. Frequently used foreign words.

**SECTION D**

**Advertisement Writing**

Classified, Display, Boxed, Billboard, Online

**Suggested Readings/ Books**

1. KK Ramchandran, et al Business Communication, Macmillan, New Delhi
2. Swati Samantaray, Business Communication and Communicative English, Sultan Chand, New Delhi.
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
4. Computer Mediated Communication 1st Edition by Crispin Thurlow (Lara Martin Lengel , Alice Tomic.
5. Collins, Patrick. Speak with Power and Confidence. New York: Sterling, 2009.
6. Fitikides, T. J. Common Mistakes in English. London: Orient Longman.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – II)

**PAPER – 6: COMMUNICATION SKILLS-II  
(PRACTICAL)**

**Instructions** for Practical Exam: Entire syllabus will be covered for practical.

1. Receiving voice calls
2. Attending active phone calls and responding
3. Daily news listening exercises (Audio and Video)
4. Note taking
5. Listening to native speakers conversations.
6. Advertisements Writing
7. Frequently used foreign words.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**PAPER – 7: COMPUTER FUNDAMENTALS-II  
(THEORY)**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Theory Marks: 40**

**Practical Marks: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION A**

**Introduction to networks:** Network Definition, Basic Components of a Network, Network types and topologies, Uses of Computer Networks, Network Architecture.

Transmission Media: Coaxial cable, twisted pair cable, fiber optics & satellites. OSI reference model, TCP/IP reference model, comparison of OSI and TCP reference model.

**Computer Communication**

**Basic of Computer networks:** LAN, WAN, MAN.

Internet: Introduction to internet and its application/services.

Service on Internet: WWW and web-sites, Electronic mails, Communication on Internet.

**SECTION B**

**Web Browsers:** Internet Explorer, Chrome and Firefox

Surfing the Internet: Giving the URL address, Search, Moving Around in a web-site, Printing or saving portion of web pages, down loading/uploading

Chatting on Internet

**Email:** Basic of electronic mail, Creating Email id, Mailbox: Inbox and outbox. Using Emails:

Viewing an email, sending an Email, Saving mails, sending same mail to various users,

Document handling: Sending soft copy as attachment, Enclosures to email, sending a Portion of document as email

**SECTION C**

**Tally:**

**Introduction to financial accounting:** accounting concepts.

**Financial accounting basics:** company creation, accounts configuration, accounts classification, accounts master, creations of voucher, types and classes, accounts vouchers.

**Financial accounting advanced:** final accounts, bank reconciliation statement



**SECTION D**

**Inventory:** introduction to inventory, stock groups, stock categories, stock item, reorder levels, locations / go downs, units of measure, price list, tariff classification, dealer excise, opening stock, pure inventory voucher, entry of pure inventory voucher, bill of material, purchase and sales order, foreign exchange transactions.

**Business management:** New Year books, MIS reports, budget management, scenario management.

**Suggested Readings/ Books**

1. Tanenbaum A. S., “Computer Networks”, PHI.
2. TALLY ERP 9 TRAINING GUIDE - 4TH REVISED & UPDATED EDITION – 2018

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**PAPER – 7: Computer Fundamentals-II  
(PRACTICAL)**

**Instructions** for Practical Exam: Entire syllabus will be covered for practical.

1. Network types and topologies.
2. Electronic mails.
3. Communication on Internet.
4. Surfing the Internet: Giving the URL address, Search, Moving Around in a web-site, Printing or saving portion of web pages, down loading/uploading
5. Chatting on Internet
6. Introduction to financial accounting: accounting concepts.
7. Financial accounting basics: company creation, accounts configuration, accounts classification, accounts master, creations of voucher, types and classes, accounts vouchers.
8. Financial accounting advanced: final accounts, bank reconciliation statement
9. Inventory: introduction to inventory, stock groups, stock categories, stock item, reorder levels, locations / go downs, units of measure, price list, tariff classification, dealer excise, opening stock, pure inventory voucher, entry of pure inventory voucher, bill of material, purchase and sales order, foreign exchange transactions.
10. Business management: New Year books, MIS reports, budget management, scenario management.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**Paper - 8: NETWORK OPERATING SYSTEMS**

**Time: 3 hours**

**M. Marks: 100**

**Theory: 40**

**Practical: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

Introduction of various Network Operating Systems (Windows 9x/XP/2000/NT)  
Introduction to Windows 2003 server, Window 2003 features, Hardware requirements, Planning the network, Windows 2003 network security model, Special purpose servers, Licensing.

**SECTION-B**

Planning storage strategies, Options, Working with disk administrator and backup.

**SECTION-C**

Networking and Network protocols, Configuration of Windows 2003, Windows 2003 services, Architecture and security Architecture, Planning and managing group and user accounts.

**SECTION-D**

File services, Distributed file system, Remote administration, Remote access services, Internet and Intranet. Printing and supporting network clients, Performance tuning.

**References:**

1. Windows NT 4 The Complete Reference by Sybex Publisher: BPB 1999. 2. Inside Windows Server 2003: William Boswell Publisher: Pearson 2003.

DIPLOMA COURSE IN COMPUTER HARDWARE  
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**Paper - 9: PC MAINTENANCE and TROUBLESHOOTING – II**

**Time: 3 Hours**

**M. Marks: 100**

**Theory: 40**

**Practical: 60**

**Note:** Eight questions are to be set by selecting two questions from each section. Each question is divided in subsections (not exceeding 4). The candidates are required to attempt five questions by selecting one question from each section and the fifth question can be attempted from any section. All questions carry equal marks.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

**Motherboard and Buses:** Introduction, Motherboard Components, Expansion Slots system Bus Functions and Features. Upgrading and Troubleshooting Motherboard, General Bus Troubleshooting.

**SECTION-B**

**Basic Memory Concepts:** Introduction, Installing Memories, Upgrade Options and Strategies, Replacing Memories with Higher Capacity. Troubleshooting Memory.

**SECTION-C**

**Printers:** Printer Technology, How Printer Works, Attaching Printer, Installing Printer Drivers, Preventive Maintenance, Common Printer Problems and Solution

**SECTION-D**

**Error Code:** Beep Code, Post Code, Post Reader Card.

**References:**

1. Upgrading and Repairing PCs: Muller – Prentice Hall – 10th Edition, 2000.
2. Complete PC Upgrade and Maintenance Guide: Mark Minasi–BPB Publishers 15th Edition, 2004.

DIPLOMA COURSE IN COMPUTER HARDWARE  
AND NETWORK MAINTENANCE (SEMESTER – II)

**Paper–10: PRINCIPLES OF DATA COMMUNICATION and NETWORK  
MAINTENANCE**

**Time: 3 hours**

**M. Marks: 100**

**Theory: 40**

**Practical: 60**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

*Instructions for Practical Exam: Entire syllabus will be covered for practicals.*

**SECTION-A**

**Modems:** Introduction – Serial Communication – RS 232 – Flow Control – Cables – Analog Modems – Speed – Standards – Maintenance – Digital Technology – ISDN Services – Broad Band – Narrow Band – DSL – Wireless Connections – Port Problems – Modem Problems – Cable fault

**Network:** LAN – MAN – WAN – Components – Protocol – API – Setting up the Network – Installing Cables – Wireless Network – Installing and Configuring Network Cards – Hubs switches – Internetworking – Intranet working – Repeaters – Routers – Networking security – Passwords – Firewall

**SECTION-B**

**Local Area Network Protocols:** CSMA Protocols, BRAP, MLMA, IEEE standards 802, Token Bus, Token Ring, FDDI.

**IEEE Standards:** 802 – 802.3 – 802.4 – 802.5 – 802.6 Case studies: NT/2000, NETWARE and LINUX

**SECTION-C**

**Network Maintenance:** Introduction to Computer Networks -Network Topology-LAN Technologies-Ethernet Standards-Network Troubleshooting Tools-Network Components-WAN Technologies-High-Speed Wan Media-Network Media (Cabling)-Media Access Methods-The OSI reference model-TCP/IP Suite-TCP/IP Utilities-Network Services-Remote Access and Security Protocols-Network Operating System (NOS)-Fault Tolerances-Internet-Network Support.

**SECTION-D**

**Introduction to Analog and Digital Transmission:** Telephone system, Modems, Types of modems, pulse code modulation. Transmission and Switching: Multiplexing, circuit switching, packet switching, hybrid switching, ISDN service transmission.

**References:**

1. Behrouz A Forouzan: Data Communications and Networking, McGraw Hill, 2006, 4th Edition.
2. Stallings, William: Local Networks: An Introduction: Macmillan Publishing Co., Stallings.