FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

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

SESSION: 2019–20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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(ii) Subject to change in the syllabi at any time.
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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

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Skill Component / General Education</th>
<th>Subject Name</th>
<th>Hours per week</th>
<th>Credits</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td><strong>Semester-I (Total Marks: 500)</strong></td>
<td></td>
<td></td>
<td>20</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Paper – 1</td>
<td>General Education</td>
<td>Communication Skills-I</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Paper – 2</td>
<td>General Education</td>
<td>Computer Fundamentals-I</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Paper – 3</td>
<td>Skill Component</td>
<td>Computer Hardware</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Paper – 4</td>
<td>Skill Component</td>
<td>PC Maintenance and Troubleshooting – I</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Paper – 5</td>
<td>Skill Component</td>
<td>Computer Assembling and Installation</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

| **Semester-II (Total Marks: 500)** |                                     |                                        | 20 | 0  | 3  | 6           | 40           | 60          |
| Paper – 6    | General Education                   | Communication Skills-II                | 2  | 0  | 3  | 6           | 40           | 60          |
| Paper – 7    | General Education                   | Computer Fundamentals-II               | 2  | 0  | 3  | 6           | 40           | 60          |
| Paper – 8    | Skill Component                     | Network Operating Systems              | 2  | 0  | 3  | 6           | 40           | 60          |
| Paper – 9    | Skill Component                     | PC Maintenance and Troubleshooting – II| 2  | 0  | 3  | 6           | 40           | 60          |
| Paper – 10   | Skill Component                     | Principles of Data Communications and Network Maintenance | 2  | 0  | 3  | 6           | 40           | 60          |

|             |                                      |                                        | 25 | 30 |     |             |             |             |
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.
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:
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
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.
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.


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.
3. A. Goel, Computer Fundamentals, Pearson Education.
4. Will Train, Gini Corter, Annette Marquis “Microsoft Office” BPB
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.
   Spread sheets for Small accountings: Maintaining invoices/budgets, Totaling of various transactions, maintaining daily and monthly sales reports.
   Charts: drawing different types of charts.
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
Supporting chips: Introduction – Types – Clocks Generator – Bus Conductor – PIC-DMAC-PIT-PPI-RTC

SECTION-B


SECTION-C


SECTION-D

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
AND NETWORK MAINTENANCE (SEMESTER – I)

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

SECTION-B

SECTION-C

SECTION-D

References:
Paper-5: COMPUTER ASSEMBLING AND INSTALLATION

Time: 3 hours

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

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

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
SECTION-D

Power On Self Test (POST)


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

References:

PAPER – 6: COMMUNICATION SKILLS-II
(THEORY)

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
3. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD)
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
AND NETWORK MAINTENANCE (SEMESTER – II)

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

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)

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

SECTION-C

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

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

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

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

SECTION-D

References:
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


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


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: