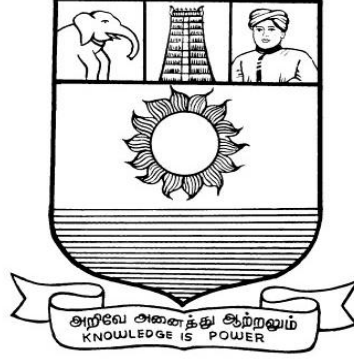


மனோன்மணியம் சுந்தரனார் பல்கலைக்கழகம்
திருநெல்வேலி - 627 012

**Manonmaniam Sundaranar University
Thirunelveli - 627 012.**



கல்விசார் நிலைக்குழுக் கூட்டம்

**MEETING OF THE STANDING COMMITTEE ON
ACADEMIC AFFAIRS HELD ON 09.02.2017**

**Syllabus for Diploma in Computer Hardware & Network
Maintenance with Lap - Top Technologies Course offered
through Directorate of Vocational Education
Community Colleges from 2017 - 2018**

Course Code: 5217

DIPLOMA IN COMPUTER HARDWARE & NETWORK MAINTENANCE

WITH LAP - TOP TECHNOLOGIES

SCHEME OF EXAMINATIONS

| Subject code | Title of the Paper | Credits | Hours | Passing Minimum |
|------------------------|---|---------|-------|-----------------|
| First Semester | | | | |
| C17CN11/E17CN01 | Computer Fundamentals | 6 | 90 | 40/100 |
| C17CN12/E17CN02 | Basics of Computer Hardware | 6 | 90 | 40/100 |
| C17CN13/E17CN03 | System Assembly & Troubleshooting | 6 | 90 | 40/100 |
| C17CE10/E17CE10 | Communicative English | 6 | 90 | 40/100 |
| C17CNP1/E17CNP1 | Practical : Computer Hardware | 6 | 90 | 40/100 |
| Second Semester | | | | |
| C17CN21/E17CN04 | Basics of Networking | 6 | 90 | 40/100 |
| C17CN22/E17CN05 | Network Protocols & Modelling | 6 | 90 | 40/100 |
| C17LS23/E17LS05 | Life Skill | 6 | 90 | 40/100 |
| C17CN24/E17CN06 | Advanced Networking Technologies & Management | 6 | 90 | 40/100 |
| C17CNP2/E17CNP2 | Practical : System & Troubleshooting | 6 | 90 | 40/100 |

Eligibility for admission: Pass in 12thStd examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

Examination: Passing Minimum for each paper is 40%. Classification will be done on the basis of percentage marks of the total marks obtained in all the papers and as given below:

- 40 % but less than 50 % - Third class
- 50 % but less than 60 % - Second class
- 60 % and above - First class

Syllabus

First Semester:-

- Paper I - Computer Fundamentals
- Paper II - Basics of Computer Hardware
- Paper III - System Assembly & Troubleshooting
- Paper IV - Communicative English
- Paper V - Practical I Computer Hardware

Second Semester:-

- Paper VI - Basics of Networking
- Paper VII - Network Protocols & Modelling
- Paper VIII - Life Skill
- Paper IX - Advanced Networking Technologies & Management
- Paper X - Practical II System & Troubleshooting

FIRST SEMESTER

(C17CN11/E17CN01)Computer Fundamentals

Unit I:

Introduction to Computers: Introduction – Characteristics of Computers – Evolution of Computers – Generation of Computers – Classification of Computers – Application of Computers.

Unit II:

Input Devices: Keyboard – Pointing Devices – Webcam – Scanners – Optical Character Recognition – Optical Mark recognition – Magnetic Ink Character Recognition – Bar Code Reader.

Output Devices: Printers – Plotters – Computer Output Microfilm – Monitors – Voice Recognition System – Projectors.

Unit III:

Primary memory: Memory Representation – Memory Hierarchy – Random Access Memory – Read only memory – Types of ROM.

Secondary Storage: Classification of Secondary Storage Devices – Storage Organization of Magnetic Disk – Storage Organization of Optical Disk – Magneto-Optical Disk – Universal Serial Bus.

Unit IV:

Database Fundamental: Data, Information and Knowledge – Database – Logical Data Concepts – Physical Data Concepts – Database Management System – Need, Benefits of DBMS, Components of DBMS, Database Administrator – DBMS Architecture – Database Models.

Unit V:

Basic Of Printers: Types of printers and printing mechanism- How printer works- Inject printer- working of laser printer- Trouble shooting printers.

Reference Books:

1. Introduction to Computer Science, IITL Education Solutions Limited, 2/e, Pearson, 2011.
2. Introduction to Computers, Peter Norton, 7/e, TMH, 2013.
3. Modern All about printers, Manohar Lotia, PradeepNair, Bijal Lotia BPB Publications, 2012.

(C17CN12/E17CN02)Basics of Computer Hardware

UNIT I:

Number systems – Decimal, Binary, Octal, Hexadecimal – Conversions– LOGIC GATES – Universal GATES – NAND – NOR – Karnaugh maps –Tabulation and Simplifications- Basics of Sequential and Combinational logic – Multiplexer and De-multiplexer basics – GRAY code – ASCII code representation.

UNIT II:

Introduction to Memories – Types of memories – Registers – Caches – Primary and Secondary memory – Associative memory – Virtual memory– Optical discs – Flash memory systems.

UNIT III:

Basic computer hardware architecture – Functional units – Instruction formats – types – Addressing modes - Basic I/O devices – Keyboard – Console systems – Mouse – Printer – plotters – Scanners – Basic CPU architecture – Introduction to workstations network computers.

UNIT IV:

Standards in PC Architecture- PC/AT System Configuration-Bus Standards – System Bus - Communication Interface – Plug and Play Systems.

Unit V:

Hardware and Software diagnostic tools – Benchmarks- Introduction to 8085 microprocessor- Internal Architecture, Pin Layout - Interfacing – Memory – Instruction Set of 8085 - Addressing modes - Basic programming using 8085.

References Books

1. Charles H. Roth Jr. Fundamentals of Logic design – 4th edition – Jaico publishing house, 2011.
2. Carl Hamacher.V., Zvonko G. Vranesic, Safwat G.Zaky “Computer organization” TMH, 2010.
3. Gaonkar – Micro Processor Architecture programming and application with 8085, Penram International Publishing; 6th edition, 2013.
4. Govindarajulu.B, IBM PC and Clones Hardware trouble shooting and maintenance Tata McGraw-Hill, New Delhi, 2012.

(C17CN13/E17CN03)System Assembly & Troubleshooting

Unit I:

Troubleshooting General PC Problems – Introduction- General Troubleshooting rules - Common Problems & Solutions- Preventive Maintenance.

Unit II:

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

Unit III:

Hard Disk: Introduction - Disk Basics - Disk Performance & Characteristics - Drive Construction - Drive Testing & troubleshooting. **Motherboard & Buses:** Introduction, Motherboard Components, Expansion Slots system Bus Functions & Features. Upgrading & Troubleshooting Motherboard, General Bus Troubleshooting.

Unit IV:

Basic Memory Concepts: Introduction - Installing Memories - Upgrade Options & Strategies - Replacing Memories with Higher Capacity - Troubleshooting Memory.

Unit V:

Printers: Printer Technology - How Printer Works - Attaching Printer - Installing Printer Drivers - Preventive Maintenance - Common Printer Problems & Solution – Error Code - Beep Code - Post Code - Post Reader Card.

References Book:

1. Upgrading & Repairing PCs: Muller – Prentice Hall – 10th Edition, 2010.
2. Complete PC Upgrade & Maintenance Guide: Mark Minasi–BPB Publishers–15th Edition, 2014.

(C17CE10/E17CE10)Communicative English

Unit I: Learning context

Concept of learning – Learning style –Grammatical framework – sentence framing – paragraph and texts

Unit II: Reading

Basic concept – Purposes of reading-Decoding-Reading materials – Barriers of reading

Unit III: Writing

Basic concept-Writing style-Terminology-stages-English spelling and punctuation – Written texts

Unit IV: Speaking

Language functions-Conversation- Features of spoken English – Types of English course: functional English, English literature, advance English – Phonetic

Unit V: Developing Communication Skills

Meaning –Classroom presence- Features of developing learning process- Practical skills and Listening- uses of communicative English

References

1. Raman,m.&S.Sharma (2011) communication skills,OUP,New Delhi: India
2. Lata,P.&S.Kumar(2011) communication skills,OUP,New Delhi: India,
- 3.Leech,G&J.Svartvik(2002) A communicative grammar of English,Pearson,India,
4. Sethi,J. and P.V. Dharmija (2007) A course in Phonetics and spoken English.Second edition, Prentice hall: New Delhi

(C17CNP1/E17CNP1) Practical 1: Computer Hardware

List of Experiments

1. Connecting & disconnecting computer peripherals and components & driver installation
2. Hard disk partitioning and formatting
3. OS installation like Windows , Linux
4. OS installation like FAT, NTFS
5. Internal component assembling and disassembling
6. Basic trouble shoots using beep Sound
7. Dual OS installation
8. Assigning and identifying valid IP Addresses.
9. Configure network computers using switch
10. Installation of Network Interface Card (NIC).

SECOND SEMESTER

(C17CN21/E17CN04)Basics of Networking

Unit I:

Communication model - Data communications networking – Data transmission concepts
And terminology - Protocol architecture - Protocols - OSI - TCP/IP - LAN architecture
Topologies - MAC - Ethernet, Fast Ethernet- Token ring - FDDI- Wireless LANS.

Unit II:

Network layer - Switching concepts - Circuit switching networks - Packet switching -
Routing - Congestion control - IP - Unreliable connectionless delivery - Datagram's -
Routing IP datagram's - ICMP.

Unit III:

Transport layer - Reliable delivery service - Congestion control - connection establishment –
Flow control - Transmission control protocol - User datagram protocol.

Unit IV:

Applications - Sessions and presentation aspects – DNS – Telnet – rlogin - FTP - SMTP –
WWW Basics of Firewalls.

Unit V:

Frame Relay - Packet switching networks - Frame Relay networks, Asynchronous transfer
mode ATM protocol Architecture - ATM Logical connection - ATM cells - ATM service
categories.

Reference Books

1. Computer Networks, Andrew S Tanenbaum, Publisher- PHI, New Delhi, 2010.
2. B. A. Fourozan, TCP/IP Protocol Suite, Tata McGraw Hill, 2011.
3. Internetworking with TCP/IP, Douglas E. Comer, Publisher- PHI, New Delhi, 2013.

(C17CN22/E17CN05)Network Protocols and Modelling

Unit I:

Detailed Layered architecture of OSI and TCP/IP Reference Model- Introduction to various LAN and WAN Protocols - Network Address- Overview - Type of Addresses- Need- advantages and disadvantages. IP Addresses- Class Full Addressing- Network ID- Host ID Special Addressing - Subnetting and Supernetting.

Unit II:

ARP/RARP: Resolution - Packet format mapping and encapsulation - Internet protocol Virtual network- Connectionless – unreliable- Packet Delivery System. Datagram format- Datagram size- Network MTU and fragmentation- Time stamp option- IP Routing algorithm IP Checksum- ICMP and IGMP - Introduction and message format.

Unit III:

UDP: Introduction to User Data gram Protocol- Format of UDP Message- Pseudo Header- Multiplexing & Demultiplexing- TCP- Introduction to Transmission Control Protocol- Ports- Collections and Endpoints- TCP Segment Format- Checksum Computation - Establishing a TCP Connection.

Unit IV:

Vector Distance & link state routing protocol - Routing Information Protocol -Open SPF Protocol - Gateway to Gateway Protocol - Hardware Broadcast - Hardware Multicast IP Multicast and Address Mapping - IP Multicast to Ethernet Multicast.

Unit V:

Basics, hardware and Software Requirement for wireless network - Types of wireless network - Wireless technologies - Wireless networking standards -Application of wireless network.

Reference Books

1. Hardware and networking by Vikas Gupta Publisher: Dreamtech press, 2012
2. Introduction to Networking by Richard McMohan Publisher Tata Mcgraw Hills Ltd. India, 2014.

(C17LS23/E17LS05)LIFE SKILL

(Common to All Courses)

UNIT- I ATTITUDE : Positive thinking – Goal setting – Problem Solving and Decision making – Leadership and Team Work.

UNIT- II COMMUNICATION SKILLS: Oral communication: Concept of English language – Fluency – Verbal communication in official and public situations.

UNIT-III COMMUNICATION SKILLS: Written Communication: Comprehension – Writing a formal letter like application for Job, enquiry, reply, complaint and such others – preparation of Resume, Curriculum Vitae.

UNIT- IV COMPUTING SKILLS - 1: Introduction to Computers, its various components and their respective functions – Memory storage devices – Microsoft (MS) Office – MS Word.

UNIT - V COMPUTING SKILLS - 2 Internet Basics – Origin of Internet – MODEM – ISP – Upload – Download – e-mail – Origin of worldwide web (www) Browsers – Search engines.

Reference books:

Life skill, Manonmaniam Sundaranar University Publications Division (2011)

(C17CN24/E17CN06)Advanced Networking Technologies and Management

Unit I:

Introduction to Computer Networks - Fundamentals of Network Communication - Network terms - network models - Network Servers.

Unit II:

Network Hardware Essentials - Network repeaters and hubs - Network Switches - Wireless Access points - Network Interface Cards - Routers.

Unit III:

Network Topologies and Technologies - Network Topologies – Bus - Star- Ring - Point -to-point - Ethernet networks and Standards – WIFI - Token Ring Networks - Wireless Access Point - Advanced features of NIC.

Unit IV:

Network Operating System Fundamentals - Operating system fundamentals- Network Operating System-Role of Client and Server Operating System - Centralized User Account and computer management - Server and Network Fault Tolerance - Operating System Virtualization - Installing an OS.

Unit V:

Server Management and Administration - Managing User and Group Accounts - Storage and file System Management, Working with Shared files and Printers, Monitoring system Reliability and performance, Backup and Fault tolerance.

Reference Books:

1. Gregory Tomsho, “Guide to Networking Essentials 6e”, Cengage Learning, 2010.
2. Michael Parmer, “ Hands On Networking Essentials”, Cengage Learning, 2013.
3. Paul Browning, CISCO CCNA simplified, Cisco Press, 2011.

(C17CNP2/E17CNP2)Practical 2: System & Troubleshooting

List of Experiments

1. Switch Board Wiring and Testing
2. Soldering and De-Soldering Practice
3. Component Testing and Symbols
4. Voltage Measurement of Different Circuits
5. Testing and Measurement of SMPS
6. Half wave, Full wave & Bridge rectifiers
7. Assembling of a Computer
9. Installation of different Operating Systems
10. Installation of different device drivers
11. Installation of different Application Software
12. Biometric Security Device Installation and Configuration
13. To Run All Dos Command (Internal and External Dos Command)
14. Assembling and Disassembling Of a Computer System
15. Troubleshooting and Repair Operating System: Windows XP, Windows 7
16. Installation and Troubleshooting of Printer (Dot-Matrix and Laser Printer)
17. Installation and Troubleshooting of Scanner (Photo & Bar Code Scanner)
18. To Repair and Troubleshooting of SMPS, Monitor, Printer and Motherboard