DETAILED SYLLABUS

FOR DISTANCE EDUCATION

Advanced Diploma
(One Year, Semester System)

Advanced Diploma in Hardware and Networking

COURSE TITLE: ADVANCED DIPLOMA IN HARDWARE & NETWORKING
DURATION : 1 YEAR
MODE : SEMESTER

FIRST SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
ANALOG & DIGITAL ELECTRONICS	ADHN/S/110	40	60	0	0	100
ANALOG AND DIGITAL ELECTRONICS	ADHN/S/110 P	0	0	40	60	100
MICROPROCESSORS	ADHN/S/120	40	60	0	0	100
MICROPROCESSORS	ADHN/S/120 P	0	0	40	60	100
OPERATING SYSTEMS	ADHN/S/130	40	60	0	0	100
OPERATING SYSTEMS	ADHN/S/130 P	0	0	40	60	100

SECOND SEMESTER

COURSE TITLE	Paper Code	MARKS				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
ASSEMBLY, INSTALLATION & MAINTENACE OF COMPUTERS	ADHN/S/210	40	60	0	0	100
ASSEMBLY, INSTALLATION & MAINTENACE OF COMPUTERS	ADHN/S/210 P	0	0	40	60	100
COMPUTER PERIPHERALS & INTERFACES	ADHN/S/220	40	60	0	0	100
COMPUTER PERIPHERALS & INTERFACES	ADHN/S/220 P	0	0	40	60	100
NETWORKING CONCEPTS & LAN MANAGEMENT	ADHN/S/230	40	60	0	0	100
NETWORKING CONCEPTS & LAN MANAGEMENT	ADHN/S/230 P	0	0	40	60	100

FIRST SEMESTER

ADHN/S/110   **ANALOG & DIGITAL ELECTRONICS**

Maximum Time   : 3 Hrs.   University Examination   : 60 Marks
Total Marks   : 100   Continuous Internal Assessment : 40 Marks
Minimum Pass Marks : 40%

A) Instructions for paper-setters
         The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.
B) Instructions for candidates
1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A
Constructions and principles of operation of semiconductor diodes, transistors FET, MOS FETS
Analog Electronics: - Semiconductor Diode, Diode Circuits, Transistor at low frequencies, Transistor Biasing, Transistor at High Frequencies.
SECTION B
Use of Diodes as rectifier, use of transistor 2-e BJT, FET, MOSFET as an amplifier, Oscillator and as a switch.
SECTION C
Number System and Codes, Logic Gates, Combinational Circuit, Sequential Circuits, Digital Logic Families, Programmable Logic Devices, D/A and A/D convectors.
Reference: -
1. Morris Marro, "Digital & Logic Design", PHI
2. Integrated Electronics by Millman Halkias
3. Electronics Principles by Malvino of Tata McGraw Hill or
4. Electronics Circuits by Donald L. Schilling & Charles Beluo of Tata McGraw Hill
5. Electronics Devices & Circuits by Millman & Halkieas of Tata McGraw Hill

ADHN/S/110 P   **ANALOG AND DIGITAL ELECTRONICS**

Maximum Time   : 3 Hrs.   University Examination   : 60 Marks
Total Marks   : 100   Continuous Internal Assessment : 40 Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-110

ADHN/S/120　　　　　　　　　**MICROPROCESSORS**

Maximum Time　　　: 3 Hrs.　　　**University Examination**　　　: 60 Marks
Total Marks　　　　: 100　　　　**Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setters
　　　　The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.
B) Instructions for candidates
1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A
Microprocessor and Assembly Language, (In Context of Intel 8085 Microprocessor and its Assembly Language.). Evolution of Microprocessor: Overview of Intel 8085 to Intel Pentium, Motorola 6800 series, Power PC, DEC Alphachip, RISC and CISC Architecture.
Basic Microprocessor Architecture and Interface: Internal Architecture, External System Bus Architecture, Memory and Input Output Interface.
SECTION B
Programming Model: General purpose registers, Pointer and Index registers, Flags, segment registers, Program Invisible Registers, Memory Addressing and Addressing Modes
Memory Interfacing: Memory Address decoding, cache memory and Cache controllers
SECTION C
Basic I/O interface: I/O mapped I/O, Memory mapped I/O, Basic I/O and Handshaking I/O, I/O port Address decoding, 8255 programmable peripheral Interface, 8279 programmable keyboard and Display Interface, 8254 programmable Timer, 8251 Programmable Communication interface, Interrupt vector, Vector Tables, Hardware and Software Interrupts, 8259 programmable Interrupt Controller, Real Time Clock, Direct Memory Access 8237/8257 DMA Controller, Video Controller, Shared Bus Operation.
Reference: -
1. Microprocessor & Microcomputers Technology by Hanley of BPB Publications
2. Microprocessor Data Handbook by BPB Publications
3. Goankar "Microprocessor" New Age Publication.
4. Malvino & Brown "Digital Computer Electronics", TMH.

ADHN/S/120 P   **MICROPROCESSORS**

Maximum Time   : 3 Hrs.   University Examination   : 60 Marks
Total Marks   : 100   Continuous Internal Assessment : 40
Marks
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-120

ADHN/S/130   OPERATING SYSTEMS

Maximum Time   : 3 Hrs.   **University Examination**   : 60 Marks
Total Marks   : 100   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setters

The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A

Introduction to operating System, its need and Operating system services, Definition, Early systems, Simple batch systems, Multiprogrammed batched systems, Time sharing systems, Personal computer systems, Real time systems. Process Management: Process concept, Process scheduling, Definition of context switching. CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms.

SECTION B

Deadlocks: Deadlock characterisation, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery. Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Segmentation with paging. Virtual Memory: Demand paging, Performance of demand paging, Page replacement, Page replacement algorithms, Thrashing.

SECTION C

File management: File system Structure, Allocation methods: Contiguous allocation, Linked allocation, Indexed allocation.

Device Management: Disk structure, Disk scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, Selecting disk scheduling algorithm.

References:

1. Andrew s. Tanenbaum, " Modern Operating Systems", Addison Wesley.
2. Abraham Silberschatz, Peter B. Galvin, " Operating System Concepts", Addison-Wesley publishing. Co., 4th. Ed., 1994.
3. Brinch Hansen, "Operating System Principles", Prentice-Hall, 1984.
4. N. Haberman, "Introduction to Operating System Design", Galgotia Publication, 1986.
5. Brich Hansen, "The Architecture of Concurrent Programs", PHI, 1978.
6. Dhamdher "System Programming & Operating Systems", TMH.

ADHN/S/130 P   **OPERATING SYSTEMS**

Maximum Time	**: 3 Hrs.**	**University Examination**	**: 60 Marks**
Total Marks	**: 100**	**Continuous Internal Assessment : 40 Marks**	
Minimum Pass Marks : 40%			

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-130

SECOND SEMESTER

ADHN/S/210   ASSEMBLY, INSTALLATION & MAINTENACE OF COMPUTERS

Maximum Time   : 3 Hrs.   **University Examination**   : 60 Marks
Total Marks   : 100   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setters
The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.
B) Instructions for candidates
1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A
Introduction to Computers, Inside PC, On Board Memory, Motherboard, CPU & Basic Terms
SECTION B
Study of XT/AT-286, 386, 486, Pentium Motherboards, Familiarization with Display Cards & I/O Cards, Memory Basics, Extended & Expanded Memory, PC Expansion Bus
SECTION C
CMOS Setup, Preventive Maintenance, Installation New Circuit Boards, Troubleshooting and Servicing, Computers Maintenance
Reference: -
1. Computer Installation and Servicing by D. Balasubrahmanim of TMH
2. Troubleshooting, Maintaining, and Repairing PCs (with CD-ROM) -- by Stephen J. Bigelow; Hardcover

ADHN/S/210 P   ASSEMBLY, INSTALLATION & MAINTAINANCE OF COMPUTERS

Maximum Time   : 3 Hrs.   **University Examination**   : 60 Marks
Total Marks   : 100   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-210

ADHN/S/220   COMPUTER PERIPHERALS & INTERFACES

Maximum Time   : 3 Hrs.   **University Examination**   : 60 Marks
Total Marks   : 100   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setters
The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.
B) Instructions for candidates
1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A
Keyboards & Mouse, Floppy Disk Drive, Hard Disk Drive
SECTION B
SMPS, SCSI Hard Disk Drive, Monochrome Monitor and its troubleshooting, Dot Matrix Printers
SECTION C
Installing Printers in DOS & Windows, Study of diagnostics of Motherboard, Keyboard, Mouse using "Checkit", Study of Norton Disk Edit, NDD & Disk tool
Reference: -
1. Computer and Servicing by D. Balasubrahmanim of TMH

ADHN/S/220 P   COMPUTER PERIPHERALS AND INTERFACES

Maximum Time   : 3 Hrs.   **University Examination**   : 60 Marks
Total Marks   : 100   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-220

ADHN/S/230   NETWORKING CONCEPTS & LAN MANAGEMENT

Maximum Time   **: 3 Hrs.**   **University Examination**   **: 60 Marks**
Total Marks   **: 100**   **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setters

      The question paper will consist of four sections A, B, C, D. Sections A, B and C will have two questions from the respective sections of the syllabus and will carry 20% marks each. Section D will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B and C of the question paper and the entire section D.
2. Use of non-programmable scientific calculator is allowed.

SECTION A
Computer Networks: Uses of Computer Network, Network Hardware, Network Software, Goals and Applications of Computer networks, Computer Network structure and Architecture.
Reference Models: OSI Reference Model, TCP/IP reference Model, Comparison of OSI and TCP Reference Model, Introduction of Novell NetWare, ARPANET.

SECTION B
Local Area Network: IEEE standards 802 for LANs and MANS (802.2, 802.3, 802.4, 802.5 and 802.6). Bridges-bridges from 802.x to 802.y, transparent bridges, source routing bridges, remote bridges, comparison of 802 bridges. High speed LANs – FDDI, Fast Ethernet, HIPPI, Fibre channel. Satellite network- Polling, ALOHA, FDM, TDM, CDM.

SECTION C
The Internet Protocol- Introduction to internetworking, the IP Protocol, IP addresses, subnets, Internet control protocol, Interior and exterior gateway routing protocol, internet multicasting mobile IP, CIDR, IPv6.

References:
1. A.S. Tannenbaum, "Computer Networks", 3rd Edition, Prentice Hall, 1999.
2. D.E. Cormer," Computer Networks and Internet", 2nd Edition, Addison Wesley
      Publication, 2000.
3. D.E. Cormer and D.L. Stevens," Inter-networking with TCP-IP: Design, Implementation
      and Internals", Vol. II, Prentice Hall, 1990.
4. D. Bertsekas and R.Gallagar, "Data Networks", 2nd Edition, Prentice-Hall, 1992.
5 .Stevens W.R.," UNIX Network Programming," Prentice Hall, 1990.
6. Keiss, "Local Area Networks", TMH.
7. Frozan, "Data Communication & Networking", TMH.

ADHN/S/230 P   NETWORKING CONCEPTS & LAN MANAGEMENT

Maximum Time	**: 3 Hrs.**	**University Examination**	**: 60 Marks**
Total Marks	**: 100**	**Continuous Internal Assessment : 40 Marks**	
Minimum Pass Marks : 40%			

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. PGDHM-230