BCT-201: MICROPROCESSOR INTERFACING AND COMPUTER HARDWARE

External Marks: 45   **Maximum Time: 3 Hrs.**
Minimum Pass Marks: 35%   **Lectures to be delivered: 45-55 Hrs.**
Internal Assessment: 15

A) Instructions for paper-setter
   The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 40% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 20% marks in all.
B) Instructions for candidates
1. Candidates are required to attempt two question each from sections A & B of the question paper and the entire section C .
2. Use of non-programmable scientific calculator is allowed.

SECTION-A

Introduction to Microprocessors: Microprocessor basic concepts, microprocessor architecture, instruction set, addressing modes, interrupts, memory mapping 8086, 8088.
Architecture of 16-bit processor: Intel 8086/8088, instruction set, descriptors, 8086/8088 System connections - Timing and trouble shooting, Interrupt structure of 8086 - use of DOS interrupts of IBM-PC.
Digital Interfacing: Programmable parallel ports and handshake input/output, interfacing displays and keyboards, centronics parallel port standards, printer interfacing and sharing.

Analog Interfacing and Industrial Control: ADC and DAC specifications, interfacing and applications, A Microcomputer based industrial process-control system and instrument.

SECTION-B

Multiple Microprocessor System Buses: 8086/8088 maximum and minimum modes, DMA data transfer, Interfacing and refreshing dynamic RAM, Math coprocessor - 8087 and I/O Processor-8089.
Multiple bus microcomputer system, VME bus concepts, IEEE488SPIB, PC, EISA and PCI buses.
Data Communication:Synchronous/Asynchronous data communication (USART study). Serial data transmission methods and standards: RS-232, Universal Serial Bus (USB).
Telephone Circuits and Systems, CODECs, TDM and PCM, Asyncronous Communication and Protocol using 8251 Chip.
Hardware Layout of IBM Compatible Computers: Motherboard, disk control, multi serial I/O cards, FAX and Telex cards EGA/VGA.

Text Book:

1.   Douglas Hall, *Microprocessor and Interfacing*, PHI Publications.

Reference Books:

1.   Peter Norton, *Inside the IBM-PC*.
2.   Liu and Gibson, *Microprocessor Systems: The 8086/8088 Family Architecture, Programming and Design*, PHI Publications.
3.   Ray Duncan, *Advance MS-DOS*.
4.   IBM-PC/XT Hardware: *Reference Manual*.

PAPER BCT-202 : LAB-III (Practical Based on Paper BCT-201)

Max. Marks : 40   **Max. Time : 3 hrs.**
Min. Pass Marks : 35%   **Practical Unit : 75 periods**

The practical lab course will comprise of exercise to supplement what is learnt under Paper BCT-201

Break up:

Lab Record   -   05 Marks
Viva -Voce   -   10 Marks
Program Development and Execution   -   25 Mark

BCT -203 : ELECTRONIC CIRCUITRY OF MONITORS AND PERIPHERALS

External Marks: 45   **Maximum Time: 3 Hrs.**
Minimum Pass Marks: 35%   **Lectures to be delivered: 45-55 Hrs.**
Internal Assessment: 15

A) Instructions for paper-setter
   The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 40% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 20% marks in all.

B) Instructions for candidates
1. Candidates are required to attempt two question each from sections A & B of the question paper and the entire section C .
2. Use of non-programmable scientific calculator is allowed.

SECTION-A

Monitors: Monitor basics, Digital and Analog Monitors, Monochrome and Colour monitors, CRT terminals, Graphic terminals, Laptop Displays, Monitor Selection, Testing Monitors, Display Adapters, Choice of display cards CGA, EGA, VGA and SVGA etc. Dual Monitor Systems, Display Problems.
Keyboard: Keyboard Basics, XT, Diagnosing problems, Dismantling and Reassembly.
Mouse: Mouse Basics, types, components, buttons and wheels, mouse positioning methods, mouse cleaning.
Power Supply and Power Protection: Replacing a power supply, components of the power supply, power supply. Form factor, Form factor connectors, Maintaining and upgrading the power supply, protecting the PC and AC.
Optical Disks: CD-ROM and DVDs - their External and internal drivers, installing, removing and caring for disks.

SECTION-B

Hard Disk: Hard Disk Basics, Recording Media and Methods, Head Actuators, Head Parking, Hard Disk Interfaces, Controllers, Driver Types, Cylinder Wraparound, Hard Disk Cards, Low-level Formatting, Interleaving, Skew, Disk Optimization, Installing, Removing and Setting up a Hard Disk, Bad Sectors, File recovery and Hard Disk Problems.
Serial Port : Basics, Asynchronous and Synchronous communication, Serial Port hardware, Managing Serial Communication, Handshaking, Diagnosing Problems, Breakout Box, USB, Serial Port Problems.
Serial Devices: Serial Printers, Plotters, Mice, Modems, and Null Modems.
Printers: Printing Mechanisms, Parallel (Getronics) Interface, Parallel Ports, Types of Printers - Dot Matrix, Inkjet, Laser, Daisywheel, Thermal Transfer Printers, Preventative maintenance of printers, parallel and serial Printer Problems, Printer Configuration Problems, Line and Page control problems, Diagnosing Problems.

Text Book:

1. Lotia, Nair, *Modern all about Monitors*, BPB Publications.

Reference Books:

1. Jullian Moss, *Upgrading, Maintaining & Servicing IBM PCs and Compatibles*, BBB Publications.
2. *Modern All About Hard Disk Drives*.
3. Lotia, *Modern All about keyboard & Mouse*, BBB Publications.
4. Lotia, Nair, *Modern all about Monitors*, BPB Publications.
5. *The Complete PC Upgrade and Maintenance Guide* by Mark Minar (BPB Publication).

BCT-204 : LAB-IV (Practical Based on Paper BCT-203)

Max. Marks : 40   **Max. Time : 3 hrs.**
Min. Pass Marks : 35%   **Practical Unit : 75 periods**

The practical lab course will comprise of exercise to supplement what is learnt under Paper BCT-203

Break up:

Lab Record   -   05 Marks
Viva -Voce   -   10 Marks
Program Development and Execution   -   25 Mark