

2. Thomas, G.B. and R. L. Finney: Calculus & Analytical Geometry, Addison-Wesley , 9<sup>th</sup> edition.
3. Chandrika Prasad : Mathematics for Engineers, Prasad Mudranalaya, Allahabad, 19<sup>th</sup> edition
4. Shanti Narayan: Differential Calculus, S.Chand & Co.
5. Shanti Narayan: Integral Calculus, S.Chand & Co.

## BCA 106: Computer Organization

### UNIT-I

#### Overview of electronics:

**Electronic components** – Register, Capacitor and Inductors, Semiconductor devices – Diodes, Transistors (BJT and FET). Analog vs Digital electronics, Transistor as a switch. Integrated circuits, SSI, MSI, LSI, and VLSI circuits. Multivibrators – astable, bistable, monostable, counters ripple and decade, edge and level triggering.

### UNIT-II

#### Building blocks of computer system:

**Basic building blocks** – I/O, Memory, ALU and its components, Control Unit and its functions, Instruction – word, Instruction and Execution cycle, branch, skip, jump and shift instruction, Operation of control registers; Controlling of arithmetic operations;

### UNIT-III

#### Addressing techniques and registers:

**Addressing techniques** – Direct, Indirect, Immediate, Relative, Indexed addressing and paging. Registers – Indexed, General purpose, Special purpose, overflow, carry, shift, scratch, Memory Buffer register; accumulators; stack pointers; floating point; status information

and buffer registers.

#### UNIT-IV

##### Memory:

Main memory, RAM, static and dynamic, ROM, EPROM, EEPROM, EAROM, Cache and Virtual memory.

#### UNIT- V

##### Interconnecting System components:

Buses, Interfacing buses, Bus formats – address, data and control, Interfacing keyboard, display, auxiliary storage devices and printers. I/O cards in personal computers.

Introduction to Microprocessors and Microcontrollers: introduction to 8085 micropocesor, examples of few instructions to understand addressing techniques. Difference between microprocessor and microcontrollers.

##### Recommended Books

1. Andrew S. Tanenbaum , Structured Computer Organization,Printice Hall.
2. William Stallings, Computer Organization and Architecture , Sixth Edition, Pearson.

#### BCA 107: Practical I: PC Software and Basic Electronics Lab.

Experiments based on papers BCA 102 and BCA 106.

#### BCA 107: Practical II: C Programming Lab.

Experiments based on paper BCA 103.

#### Second Year B.C.A.

(Effective from session 2011-12)

#### BCA 201: Computer Communications and Networking

##### UNIT-I

**Protocol Architecture :** Overview: Communication model, Communication Tasks, Data Communication Networking: WAN, LAN,Wireless Networks. Basics of Network Software: Protocol and protocol architecture, Protocol functions, Design Issues for the layers, interfaces &Services, Connection oriented and connectionless services, service primitives, relationship of services to protocols , ISO REF Models, TCP/IP Model.

**Data Communications:** Data Transmission: Concepts of Frequency,Spectrum, bandwidth, Electromagnetic spectrum and frequencies for data communication, Fourier analysis , Data and signal, Transmission impairments, channel capacity, Nyquist bandwidth, Shannon capacity formula ,decibels and signal strength, Trans-

