Computer Architecture Syllabus for BCA

UNIT 1: Computer Organization and Design

- Basic computer organization and design
- Instructions and instruction codes
- Timing and control/instruction cycle
- Register/ Types of register/ general purpose & special purpose registers/ index registers
- Register transfer and micro-operations/ register transfer instructions
- Memory and memory function
- Bus/ Data transfer instructions
- Arithmetic logic micro-operations/ shift micro-operations
- Input/ Output and interrupts
- Memory reference instructions
- Memory interfacing memory/ Cache memory

UNIT 2: Central Processing Unit

- General Register Organization/ stacks organizations instruction formats
- addressing modes
- Data transfer and manipulation
- Program control reduced computer
- Pipeline/ RISC/ CISC pipeline vector
- Processing/ array processing
- Arithmetic Algorithms: Integer multiplication using shift and add
- Booth's algorithm
- Integer division
- Floating-point representations

UNIT 3: Computer Arithmetic

- Addition algorithms
- Subtraction algorithms
- Multiplication algorithms
- Divisor algorithms
- Floating point
- Arithmetic operations
- Decimal arithmetic operations

UNIT 4: Input-Output Organization

- Peripheral devices
- Input/output interface
- ALU Asynchronous Data transfer
- Mode of transfer
- Priority interrupts
- Direct memory Address (DMA)
- Input/ Output processor (IOP)
- Serial communication

UNIT 5: Evaluation of Microprocessor

- Overview of Intel 8085 to Intel Pentium processors Basic microprocessors
- Architecture and interface
- Internal architecture
- External architecture
- Memory and Input/ output interface

UNIT 6: Assembly Language

- Introduction to Assembly language
- Assembler
- Assembly level instructions
- Macro and use of macros in I/C instructions
- Program loops
- Programming arithmetic and logic subroutines
- Input-Output programming.