Sub Code: NCS505

Paper Id: 110521 Roll No:

**B. TECH.**
**(SEM-V) THEORY EXAMINATION 2019-20**
**COMPUTER ARCHITECTURE**

**Time: 3 Hours** **Total Marks: 100**

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1. Attempt all questions in brief.** **2 x 10 = 20**

a. What are the basic components of computer? Explain in brief.
b. Explain the four categories of the most common micro operations.
c. Draw the block diagram of CPU and explain each component in detail.
d. What are the CPU signals used in the DMA controller?
e. What are the difference between RISC and CISC?
f. Explain difference between peripherals and central computer during input output interface.
g. Draw and explain the hardware for Booth Algorithm.
h. What is associative memory? Explain its salient features.
i. Differentiate between Isolated I/O and memory mapped I/O.
j. Explain the register organization in the CPU.

## SECTION B

**2. Attempt any three of the following:** **10 x 3= 30**

a. Explain the different instruction formats in detail.
b. Explain direct cache mapping and set associative cache mapping.
c. Explain virtual memory implementation with address and memory space.
d. What is the role of input output processor in CPU? How it communicate with CPU?
e. Explain the concepts of Priority Interrupt and Daisy Chain Interrupt.

## SECTION C

**3. Attempt any one part of the following:** **10 x 1 = 10**

a. Define Asynchronous data transfer. Also explain the strobe control method.
b. Draw and explain the flow chart for Booth algorithm and Array multiplier.

**4. Attempt any one part of the following:** **10 x 1 = 10**

a. Explain the concept of Bus transfer and Memory Transfer in detail?
b. Draw en explain the block diagram of RAM chips and ROM chips.

**5. Attempt any one part of the following:** **10 x 1 = 10**

a. Explain the term – Hit Ratio, Locality of reference, Mapping process.
b. Draw and explain the flow chart of signed magnitude addition and subtraction operations.

**6. Attempt any one part of the following:** **10 x 1 = 10**

a. Explain the differences between Direct and Indirect addressing modes.
b. Explain the concept of 2D and 2 ½ memory organization.

**7. Attempt any one part of the following:** **10 x 1 = 10**

a. Explain the major differences between horizontal programming and Vertical Programming.
b. Explain the differences between hardwired control and micro programmed control.