

# C1032

Total Pages : 4

Roll No. ....

## MSC-602

### Computer System Architecture

(MCA-20)

3rd Semester Examination, 2022 (June)

**Time : 2 Hours]**

**Max. Marks : 80**

**Note :** This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

### SECTION-A

**(Long Answer Type Questions)**

**Note :** Section 'A' contains Five (05) long answer type questions of Twenty (20) marks each. Learners are required to answer any Two (02) questions only.

(2×20=40)

1. Answer the following:

- (a) Describe model of a Computer and its parts with a diagram. 7

- (b) Explain Von Neumann architecture. 5
- (c) What is an analog signal? 4
- (d) What is a digital signal? 4
- 2. Answer the following :**
- (a) Explain the functioning of full adder. 7
- (b) What do you mean by flag bits. Explain the use of the following flags- sign, zero, carry, overflow and equal. 8
- (c) What are the functions of an I/O module ? 5
- 3. Answer the following :**
- (a) Explain the DMA module and its function. 6
- (b) How an interrupt mechanism works- explain briefly? 7
- (c) Explain the concept of daisy chain mechanism for device identification. 7
- 4. Answer the following :**
- (a) Explain the fixed head and movable head disk unit. 6
- (b) Define track, cylinder and sector. 6
- (c) Explain the concept of register window to handle the procedure calls. 8

5. Answer the following :

(a) If a circular register buffer is used to handle local variables for nested procedures, describe the approaches for handling global variables. 10

(b) Explain the concept of instruction pipeline. 5

(c) Explain the concept of delayed branching technique. 5

## SECTION-B

### (Short Answer Type Questions)

**Note :** Section 'B' contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any Four (04) questions only. (4×10=40)

1. Answer the following :

(a) Explain the functioning of ALU with the help of a block diagram. 5

(b) What is memory hierarchy? Why do we need it? 5

2. Explain the working of binary multiplier with the help of a block diagram.

3. Give a block diagram for a 250k × 16 memory module using 64k x 1.

4. Draw a block diagram of virtual memory and explain the address translation process in detail.
  5. Give and explain the instruction cycle state diagram.
  6. Explain the hand shake control of data transfer for asynchronous bus.
  7. Define the term seek time, rotational delay and access time.
  8. Briefly explain the basic approaches used to minimize register-memory operations on RISC machines.
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