

(6 Pages)

Reg. No. :

Code No. : 30584 E Sub. Code : AMCS 42

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Fourth Semester

Computer Science — Core

COMPUTER ARCHITECTURE

(For those who joined in July 2020 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A sequence of instructions for the computer is called _____.
(a) hardware (b) program
(c) data (d) instruction
2. The solution to any problem stated by a finite number of procedural steps is _____.
(a) procedure (b) algorithm
(c) subprogram (d) specification

3. In immediate addressing the operand is placed _____

- (a) in the CPU register
- (b) after OP code in the instruction
- (c) in memory
- (d) in stack

4. A stack pointer is _____

- (a) a 16-bit register in the microprocessor that indicate the beginning of the stack memory
- (b) a register that decodes and executes 16-bit arithmetic expression
- (c) the first memory location where a subroutine address is stored
- (d) a register in which flag bits are stored

5. The register that holds an address for the memory address is called _____

- (a) memory address register
- (b) shift register
- (c) addition
- (d) division

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6. In booth multiplication algorithm, operates strings of 0's in the multiplier requires no _____ but just shifting.
- (a) subtractor (b) multiplication
(c) addition (d) division
7. An interface that provides I/O transfer of data directly to and from the memory unit and peripheral is termed as _____
- (a) DDA (b) Serial interface
(c) BR (d) DMA
8. The technique which allows the DMA controller to transfer one data word at a time, after which it must return control of the buses to the CPU is known as _____
- (a) bus request (b) cycle stealing
(c) bus grant (d) burst transfer
9. Cache memory works on the principle of
- (a) locality of data
(b) locality of memory
(c) locality of reference
(d) locality of reference and memory

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10. Memory unit accessed by content is called
- (a) Real only memory
(b) Programmable memory
(c) Virtual memory
(d) Associative memory

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe the stored program organization in instruction code.
- Or
- (b) Elaborate the basic computer instruction formats.
12. (a) Write down the general register organization.
- Or
- (b) Distinguish between the one-address instructions and zero-address instructions.

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[P.T.O.]



13. (a) Explain the booth algorithm for multiplication of signed-2's complement numbers.

Or

- (b) Summarize the addition and subtraction with signed-magnitude data.
14. (a) Point out the functions of asynchronous communication interface.

Or

- (b) Differentiate between the isolated and memory-mapped I/O.
15. (a) Explain the memory connection to CPU.

Or

- (b) State the advantages of cache memory.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Draw and explain the basic computer registers connected to a common bus.

Or

- (b) Illustrate the execution of register reference instructions.

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17. (a) What is a stack? What are the operations performed on stack? Describe.

Or

- (b) Outline the various types of addressing modes.
18. (a) Elaborate the flowchart for hardware divide algorithm.

Or

- (b) Determine the registers for floating point arithmetic operations.
19. (a) Discuss the block diagram of DMA also describe how DMA is used to transfer data from peripherals.

Or

- (b) Explain the asynchronous data transfer with diagram.
20. (a) Draw and explain the block diagram of associative memory.

Or

- (b) Compare the address space and memory space in virtual memory.

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