



BCA/CMO:304 (O)

2024

(3rd Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : CMO : 304 (Old Course)

(Computer Organization)

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

The figures in the margin indicate full marks for the questions

1. (a) What is instruction? Explain instruction cycle with a neat flowchart. 9
- Or
- (b) List out different types of computer register and explain. 4
- (c) Explain with the help of a diagram, the working of control unit. 5
2. (a) What is addressing mode? Explain the different types of addressing mode with example. 4

- (b) What is pipeline technique? Explain arithmetic pipeline with a neat diagram. 5

Or

- (c) Explain vector processing and array processors. 4
- (d) Explain RISC pipeline technique with a neat diagram. 5
3. (a) Multiply -4 by -2 using Booth's algorithm. 4
- (b) Divide 8 by 4 using division algorithm. 5

Or

- (c) List out the different steps to perform division algorithm. 4
- (d) Explain the basic principle of Booth's algorithm and give the algorithm in flowchart form. 5
4. (a) Differentiate between synchronous and asynchronous data transfer. Give an example. 4
- (b) Explain data transfer using DMA facility with a neat block diagram. 5

Or

- (c) With the help of a block diagram, explain DMA controller. 5
- (d) Explain how higher priority interrupts are handled with a neat diagram. 4
- 5. (a) Explain the hierarchy of memory organization with a neat diagram. 5
- (b) Explain cache memory organization showing transfer of data from disk storage device to cache memory via main memory. 4

Or

- (c) Explain how to write data into cache memory. 5
- (d) What is virtual memory? Explain the use of mapping table in virtual memory. 4

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(3rd Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper Code : CMO : 304 (Old Course)

(Computer Organization)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

- 1. Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10**

(a) _____ indicates whether there is overflow or not.

(i) Sign ()

(ii) Zero ()

(iii) Carry ()

(iv) All of the above ()

(b) A/An _____ is required for doing manipulation on data.

(i) processor register ()

(ii) accumulator ()

(iii) register A ()

(iv) All of the above ()

(c) The address of operand is also known as the

(i) addressing mode ()

(ii) effective address ()

(iii) opcode ()

(iv) All of the above ()

(d) CLE is

(i) complement E flip-flop ()

(ii) clear E flip-flop ()

(iii) Both (i) and (ii) ()

(iv) None of the above ()

(e) If FGO is set to 1 then

- (i) AC transmits data to OUTPR ()
- (ii) AC transmits data to INPR ()
- (iii) AC transmits address to OUTPR ()
- (iv) AC transmits address to INPR ()

(f) Operand is fetched from memory during

- (i) fetch phase ()
- (ii) decode phase ()
- (iii) execute phase ()
- (iv) read phase ()

(g) Direct addresses are same as

- (i) effective address ()
- (ii) address of operand ()
- (iii) Both (i) and (ii) ()
- (iv) immediate address ()

(h) After inserting new elements into the stack, the sp is

(i) decremented ()

(ii) incremented ()

(iii) moved to the right ()

(iv) moved to the left ()

(i) Suppose there are seven instructions and each instruction has six stages. Also, each stage consumes 1 unit of time, therefore, the total time consumed would be

(i) 47 ()

(ii) 43 ()

(iii) 42 ()

(iv) 44 ()

(j) Find the 2's complement of the decimal number 5.

(i) 1111 ()

(ii) 0011 ()

(iii) 1011 ()

(iv) 1100 ()

2. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

(a) Addition of two numbers, represented in signed magnitude form, may result in overflow.

(T / F)

(b) Synchronous data transfer is less expensive than asynchronous data transfer.

(T / F)

(c) All interrupts must be handled by CPU.

(T / F)

(d) Virtual memory allows for very effective multiprogramming.

(T / F)

(e) Fetch cycle is executed after execution cycle.

(T / F)

3. Answer the following questions in short :

2×5=10

(a) What is three-address instruction?

(7)

(b) What is sequence counter (SC)?

(c) What is known as cycle stealing in DMA?

(d) Differentiate between static and dynamic RAMs.

(e) What is hardware interrupt?
