

END TERM EXAMINATION

THIRD SEMESTER [BCA] DEC. - 2019

Paper Code: BCA203

Subject: Computer Architecture

Time: 3 Hours

Maximum Marks: 75

Note: Q. No. 1 is compulsory. Attempt one question from each unit.

- Q1 Attempt **any five** of the following: - (5x5=25)
- Differentiate between strobe and handshaking method in context of asynchronous data transfer.
 - What is the need of input output interface.
 - What is memory interleaving?
 - Explain with diagram Control Unit of Basic Computer.
 - Explain Register Transfer language.
 - Give difference between RISC and CISC.
 - Give symbolic description for the following memory reference instruction: AND, STA, BSA.

UNIT I

- Q2. a) Explain construction of Bus having 4 register of 8 bit each by using three state bus buffer and a decoder. (6)
- b) Explain and Design a 4-bit arithmetic circuit which perform all arithmetic operations. (6.5)
- Q3. a) Explain the Instruction Cycle with the help of flowchart. (6)
- b) Starting from an initial value of R = 11110110, determine the sequence of binary values of R after a logical shift left, followed by a circular shift right, followed by a logical shift right and a circular shift left. (6.5)

UNIT II

- Q4. What is pipeline? Explain the instruction pipeline and the three major difficulties that cause instruction pipeline to deviate from its normal operation and there any two solutions problems. (12.5)
- Q5. a) Explain all the addressing modes with example for each. (6)
- b) Evaluate the given arithmetic statement using zero, one or two Address Instruction. (6.5)

$$X = \frac{A - B + C}{(G + H) * K}$$

UNIT III

- Q6. a) Multiply using Booth algorithm (+19) x (-11). (6)
- b) Discuss DMA. Discuss DMA Controller and DMA Transfer with block diagram? (6.5)
- Q7. a) Explain Input/ Output Interface with help of diagram? (6)
- b) Define the following: (6.5)
- (a) Priority Interrupt (b) Daisy-chaining priority

[P.T.O.]

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P1/P2

UNIT IV

Q8. a) What is Mapping? Explain all Mapping Methods (associative mapping, direct mapping and set-associative mapping) **(12.5)**

Q9. a) What is Associative Memory? Explain with suitable block diagram and explain its logic. **(6)**

b) What is the need of memory hierarchy in a computer system? Explain the block diagrams of RAM and ROM chips. **(6.5)**

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