

Total number of printed pages-3

16 (CS 571) COAR

2019 C

**COMPUTER ARCHITECTURE AND  
ORGANIZATION**

Full Marks : 100

Time : Three hours

*The figures in the margin indicate  
full marks for the questions.*

Answer any five questions.

1. (a) Apply an algorithm to multiply the following: 8

Multiplicand : 1011

Multiplier : 1001

(Show the steps)

- ✓ (b) What are the basic components of a computer? Draw a block diagram and explain the working mechanism.

$2+5+5=12$

Contd.

2. (a) To evaluate  $Y = (B + C) - (D - C)/E$ , give the required register operations, using the following instructions:  $3 \times 3 = 9$

(i) Three address

(ii) Two address

(iii) Zero address

(b) What is register and indirect addressing modes? Give example. 6

(c) What is a microinstruction? In which control organization they are useful? 5

3. (a) Design a circuit to perform the addition and subtraction operation on two 4-bit numbers. 12

(c) Design a circuit to implement eight different logic micro-operations. 8

(a) Design a 4-bit line common bus system with registers and multiplexers. Also give a function table. 8

(ii) What is the use of DMA? With the help of a diagram, explain DMA transfer. 3+9=12

5. (a) What is pipeline architecture? Give an example. With the help of another example, show a hazard produced by a load on a three-segment pipeline.  $3+5+6=14$

(b) What is interrupt? What are the types of interrupt? Briefly mention their roles. 5

6. Write briefly on the following:  $5 \times 4 = 20$

(a) Set Associative memory

(b) Omega network

(c) Multistage switching network

(d) Flynn's Taxonomy.

