

Roll No.

Total Pages : 3

BSIT/D-14

12256

COMPUTER SYSTEM ARCHITECTURE - I

Paper - BSIT-501

Time : Three Hours]

[Maximum Marks :

{ Regular : 40

{ Reappear : 45

Note : Question No. 1 is Compulsory. Select *four* questions in all, *one* question from each unit.

Compulsory Question :

1. (i) What is the difference between hardwired organization and microprogram organization? (2)
- (ii) How do you identify whether the instruction is memory reference or register reference or I/O instruction. (2)
- (iii) What is the difference between micro-operation and macro-operation ? (2)
- (iv) What is the difference between external and internal interrupts. (2)

UNIT-I

2. (i) Explain the common bus system? How the data is manipulated? (5)
- (ii) Explain the different memory reference instructions ? (3)

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[P.T.O.

3. (i) Design the block diagram of control unit of a computer? Also draw Timing diagram. (6)
 (ii) What are the two instructions needed in the basic computer in order to set the E flip-flop to 1? (2)

UNIT-II

4. (i) Design an arithmetic circuit with one selection variable s and two n bit data inputs A and B. Draw the logic diagram for the first two stages.

S	$C_{in} = 0$	$C_{in} = 1$
0	$D = A + B$ (add)	$D = A + 1$ (increment)
1	$D = A - 1$ (decrement)	$D = A + \bar{B} + 1$ (subtract)

(5)

- (ii) Explain different types of shift micro-operations? (3)
5. (i) Draw and explain the bus system using three state buffer and a decoder instead of multiplexers and also show the connection to transfer the data from register A to register C. There are 4 registers of 4 bits each. (5)
 (ii) Explain hardware implementation of logic micro-operations? (3)

UNIT-III

6. (i) Write a note on the following :
 (a) Control memory. (2)
 (b) Microinstruction. (1)
 (c) Microprogram. (1)

- (ii) The control memory has 4096 words of 24 bits each.
- (a) How many bits are there in control address register? (1)
 - (b) How many bits are there in each of four input going to multipleness? (1)
 - (c) What are the number of inputs in each multipleness and how many multipleness are needed. (2)
7. Write a note on microprogram sequences? (8)

UNIT-IV

8. Explain various addressing modes with example? (8)
9. (i) What are the various program control instructions? (6)
- (ii) A computer has 32 bit instructions and 12 bit addresses. If there are 250 two address instructions, how many one address instructions can be formulated? (2)