

[illegible]

Total No. of Questions : 09

COMPUTER SYSTEM ARCHITECTURE

M.Code : 77483

Time : 3 Hrs.

Max. Marks : 60

1. SECTION- A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

1. Answer briefly:

- a) Define race condition in JK flip flop.
- b) Discuss the purpose of using register despite of memory.
- c) What is Encoder?
- d) Realize OR gate using only NAND gates.
- e) Give the logic diagram and characteristics table of a clocked D flip flop.
- f) What is addressing? What are direct and indirect/addressing?
- g) What are various types of buses in computer system?
- h) Draw circuit of full adder with truth table.
- i) What is the use of K maps?
- j) Simplify the Boolean function:

$$F = x'yz + x'yz' + xy'z' + xy'z$$

SECTION-B

2. Solve the following Boolean functions by using K-Map.

$$F = (w,x,y,z) = \Sigma (0,1,4,5,6,8,9,10,12,13,14).$$

3. Explain half adder and full adder in detail.
4. Explain the working of Master Slave JK Flip Flop.
5. Compare RISC and CISC architecture.
6. Implement the given function using decoder logic
- a) $F1 = \Sigma m(0,5,7)$
- b) $F2 = \Sigma m(1,2,3,4)$
- c) $F3 = \Sigma m(1,6,7).$

SECTION-C

7. Design a 32to 1 Multiplexer using 4 to 1 Multiplexer and explain its working.
8. A computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored ill one word of memory. The instruction has four parts: an indirect bit, an operation Code part, a register code part to specify one of 64 registers, and an address part.
- a) How many bits are there in operation code, the register code part and an address part?
- b) Draw the instruction word format and indicate the number of bits in each part.
- c) How many bits are there in the data and address inputs of memory?
9. Discuss various types of Logic Gates. Also, discuss their applications.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing any page of Answer Sheet will lead to UMC against the Student.