

311208

May 2024

**B.C.A. - II SEMESTER
LOGICAL ORGANIZATION
OF COMPUTER-II
(BCA-17-107)**

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.
2. Answer any four questions from Part-B in detail.
3. Different sub-parts of a question are to be attempted adjacent to each other.

PART-A

1. (a) What is meant by 'latch'? (1.5)
(b) What is meant by a universal gate? (1.5)
(c) What is meant by propagation delay? (1.5)
(d) Explain the purpose of encoder and decoder. (1.5)

409

- (e) State the excitation table of JK Flip flop. (1.5)
- (f) How does synchronous circuits differ from asynchronous circuits? (1.5)
- (g) Draw the logic circuit diagram of SR Flip flop. (1.5)
- (h) Define opcode and operand. (1.5)
- (i) State and explain the performance equation. (1.5)
- (j) What is the function of control unit? (1.5)

PART-B

- 2. (a) Explain various addressing modes in general purpose computer with examples. (10)
- (b) Design a 4-bit common bus system using multiplexers and 4 registers. (5)
- 3. (a) Using a 4-bit shift register, construct a 4-bit register that can rotate its content one position to the left or right. (5)
- (b) What is meant by counter? Suppose we have two four-bit synchronous up/down counter circuits, which we wished to cascade to make one eight-bit counter. Draw the necessary connecting wires (and any extra gates) between the two four-bit counters to make this possible. (10)
- 4. Differentiate between the following :
 - (i) RISC and CISC processors.

- (ii) T and D Flip Flop.
- (iii) Sequential and combinational circuits. (15)

- 5. (a) What is virtual memory? (5)
- (b) Discuss the Memory Hierarchy in computer system with regard to Speed, Size and Cost. (10)
- 6. (a) What are various types of registers in computer organization? (10)
- (b) Explain the different types of interrupts. (5)
- 7. Write short notes on any *three* of the following :
 - (a) Instruction Cycle.
 - (b) Mod 6 counter.
 - (c) I/O device and their controllers.
 - (d) Pipelining. (15)