



Seat No. _____

HP-003-3032003

B. C. A. (Sem. II) (CBCS) (W.E.F.-2022) Examination

April - 2023

Computer Organization & Architecture : CS-09

(New Course)

Faculty Code : 003

Subject Code : 3032003

04112

Time : $2\frac{1}{2}$ Hours / Total Marks : 70

- 1 (a) Attempt the following : 4
- (1) Which is the inverter gate of NAND gate ?
 - (2) Is flip-flop is a sequentially designed circuit ?
 - (3) POS stands for.
 - (4) Write two commutative postulates.
- (b) Attempt any one : 2
- (1) What is Boolean algebra ?
 - (2) What is combinational circuit ?
- (c) Attempt any one : 3
- (1) Explain and prove De-Morgan's theorems.
 - (2) Simplify following Boolean function using K-map.
$$F(w,x,y,z) = \sum(0,1,2,3,7,8,10) + d(5,6,11,15)$$
- (d) Attempt any one : 5
- (1) Write a detailed note on types of logic gates.
 - (2) Draw circuit and explain D and JK flip-flop.

04112

- 2 (a) Attempt the following : 4
- (1) What is Bi-directional shift register ?
 - (2) De-Multiplexer is also known as _____.
 - (3) If we construct 8 bits Mux, then how many selection lines are required?
 - (4) VLSI stands for _____.
- (b) Attempt any one : 2
- (1) Explain Buffer register.
 - (2) Explain shift register.
- (c) Attempt any one: 3
- (1) Write a note on 3x8 decoder.
 - (2) Write a note on encoder.
- (d) Attempt any one : 5
- (1) Explain multiplexer in detail.
 - (2) Draw and explain register with parallel load.
- 3 (a) Attempt the following : 4
- (1) What is parity bit ?
 - (2) Base of an octal number is _____
 - (3) If number is negative, then sign bit will be _____.
 - (4) Write 2's complement of 010011000.
- (b) Attempt any one : 2
- (1) Perform binary multiplication of 1011×101 .
 - (2) Perform binary division of $110111 \div 101$.
- (c) Attempt any one : 3
- (1) Multiply 1011.01 by 101.01 in binary.
 - (2) Explain fixed point representation with example.
- (d) Attempt any one : 5
- (1) Explain floating point representation with example.
 - (2) Explain error detection code with example.

- 4 (a) Attempt following : 4
- (1) CPU stands for _____.
 - (2) $(A+B) * C$ write prefix notation of given expression.
 - (3) Control word is of _____ number of bits.
 - (4) Register overflow is an example of _____ type of interrupt.
- (b) Attempt any one : 2
- (1) Explain major components of CPU.
 - (2) Explain Register Stack.
- (c) Attempt any one : 3
- (1) Explain interrupt and its various types.
 - (2) Draw and explain block diagram of A.L.U.
- (d) Attempt any one : 5
- (1) Write a note on general register organization.
 - (2) Write a detailed note on RPN with stack organization.
- 5 (a) Attempt following : 4
- (1) IOP stands for _____.
 - (2) DMA stands for _____.
 - (3) List out memory buses.
 - (4) Full form of BG signal in DMA.
- (b) Attempt any one : 2
- (1) What is high impedance model ?
 - (2) Write concept of input output interface.
- (c) Attempt any one : 3
- (1) Explain memory buses.
 - (2) Explain how DMA works in brief.
- (d) Attempt any one : 5
- (1) Write a detailed note on DMA controller.
 - (2) Write a detailed note on IOP.