



**MBH-003-1032003** Seat No. \_\_\_\_\_

**B. C. A. (Sem. II) (CBCS) Examination**

**March / April - 2018**

**CS - 09 : Computer Organization & Architecture**

**(New Course)**

**Faculty Code : 003**

**Subject Code : 1032003**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

1 (A) Answer the Following : 4

(1) A gate is a logic circuit with one or more input signals but \_\_\_\_\_ output signal.

(2) The Exclusive – NOR gate is equivalent to an \_\_\_\_\_ gate followed by an inverter.

(3) Demultiplexer is also known as \_\_\_\_\_

(4) A register is a group of \_\_\_\_\_ with each flip flop capable of storing one bit of information.

(B) Answer any **one** in brief : 2

(1) Explain SR Flip – Flop.

(2) Which are universal gates? Why?

(C) Answer any **one** in detail : 3

(1) Write a note on floating point representation.

(2) Explain combinational circuit.

(D) Answer any **one** : 5

(1) Explain General Register Organization.

(2) Explain ALU.

- 2 (A) Answer the Following : 4
- (1) Computer ICs work reliably because they are based on \_\_\_\_\_ design.
  - (2) PISO stands for \_\_\_\_\_
  - (3) BCD stands for \_\_\_\_\_
  - (4)  $1011001110 \% 101 =$  \_\_\_\_\_
- (B) Answer any **one** in brief : 2
- (1) Draw the logic circuit for given Boolean Function.  

$$F = (AB)(A + B' + C)(B'C')$$
  - (2) Write note on Control Word.
- (C) Answer any **one** in detail : 3
- (1) Simplify the following Boolean Function F together with the don't care condition.  

$$F(W, X, Y, Z) = \Sigma(0, 1, 2, 3, 7, 8, 10)$$

$$D(W, X, Y, Z) = d(5, 6, 11, 15)$$
  - (2) Explain Shift Register.
- (D) Answer any **one** : 5
- (1) Explain  $4 \times 1$  Multiplexer.
  - (2) Write a note on Boolean algebra.
- 3 (A) Answer the Following : 4
- (1) VLSI stands for \_\_\_\_\_
  - (2)  $A + B * C$  prefix of it is \_\_\_\_\_
  - (3) Stack works on \_\_\_\_\_ Method.
  - (4) Software interrupt is initiated by \_\_\_\_\_
- (B) Answer any **one** in brief : 2
- (1) Obtain 1's and 2's complement  
1110101  
001111110.
  - (2) Explain Don't care condition with example.

- (C) Answer any **one** in detail : 3
- (1) Explain Demultiplexer.
  - (2) Explain Decoder.
- (D) Answer any **one** : 5
- (1) State and prove De – Morgan's theorems.
  - (2) Explain Stack Organization
- 4 (A) Answer the Following : 4
- (1) AND, OR and NOT are considered as universal gate (True / False).
  - (2) In Floating Point, the first part represents a signed, fixed – point number is called the mantissa (True / False).
  - (3) Stack Overflow is the example of Internal Interrupt. (True / False)
  - (4) Stack means last in first out (LIFO) (True / False).
- (B) Answer any **one** in brief : 2
- (1) Multiply the binary numbers 1000 and 1001
  - (2) Divide 10001 by 110.
- (C) Answer any **one** in detail : 3
- (1) Explain accumulator register.
  - (2) Explain stack organization.
- (D) Answer any **one** : 5
- (1) Explain DMA Controller.
  - (2) Explain K – Map with example.

- 5 (A) Answer the Following : 4
- (1) ALU stands for \_\_\_\_\_
  - (2) DMA stands for \_\_\_\_\_
  - (3) The radix of binary number is \_\_\_\_\_
  - (4) \_\_\_\_\_ Flip – flops are free from race around problem.
- (B) Answer any **one** in brief : 2
- (1) What is Parity Bit?
  - (2) Define : Address Bus, Data Bus.
- (C) Answer any **one** in detail : 3
- (1) Explain ALU with Block diagram.
  - (2) Explain IOP.
- (D) Answer any **one** : 5
- (1) Explain Error Detecting Codes.
  - (2) Explain Bi – Directional Shift Register.
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