



JBE-P1020

Seat No. _____

M. C. A. (Sem. I) (CBCS) Examination

December - 2019

**Computer Organization and
Architecture : Paper - 1020**

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

[Total Marks : 70

- 1 (A) Attempt the following : 4
- (1) What is Processor?
 - (2) Define: Bus
 - (3) $11100 + 11110 = \underline{\hspace{2cm}}$
 - (4) $10101 - 00110 = \underline{\hspace{2cm}}$
- (B) Attempt any **one** of the following : 2
- (1) Write a note on scanner.
 - (2) Write a note on magnetic disk.
- (C) Attempt any **one** of the following : 3
- (1) Write a note on Printer with its various types.
 - (2) Convert 10011111 into its equivalent decimal, octal and hexadecimal numbers.
- (D) Attempt any **one** of the following : 5
- (1) Explain integer and floating point representation with suitable example.
 - (2) Draw block diagram of computer and explain it in detail.
- 2 (A) Attempt the following : 4
- (1) Define : Gate
 - (2) What is inverter?
 - (3) What is a Boolean algebra?
 - (4) What is Product of sum (POS)?

- (B) Attempt any **one** of the following : **2**
- (1) Explain sum of product (SOP).
 - (2) Explain bubbled AND and bubbled OR gate.
- (C) Attempt any **one** of the following : **3**
- (1) Write a note on Demorgan's theorem.
 - (2) Write a note on ex-OR gate with truth table.
- (D) Attempt any **one** of the following : **5**
- (1) What is k-map? What are the uses of it? Explain 4 variable k-map by taking suitable example.
 - (2) Which are universal gates? Why they are called universal gates? Discuss in detail.
- 3** (A) Attempt the following : **4**
- (1) Define: Virtual memory.
 - (2) Define: Cache memory.
 - (3) Define: Associative memory
 - (4) What is the use of peripheral component interconnect (PCI)?
- (B) Attempt any **one** of the following : **2**
- (1) Write a note on stack organization.
 - (2) Explain USB in brief.
- (C) Attempt any **one** of the following : **3**
- (1) Draw and explain memory hierarchy.
 - (2) Explain instruction execution in brief.
- (D) Attempt any **one** of the following : **5**
- (1) Explain various addressing modes in detail.
 - (2) Write a note on RAM and ROM with its various types in detail.

- 4 (A) Attempt the following : 4
- (1) Define : Binary Adder.
 - (2) Define : Half Adder.
 - (3) What is integrity circuit (IC)?
 - (4) What is Encoder?
- (B) Attempt any **one** of the following : 2
- (1) Explain binary adder/subtractor with diagram.
 - (2) Explain VLSI.
- (C) Attempt any **one** of the following : 3
- (1) Explain full adder with its advantages over half adder.
 - (2) Explain comparator.
- (D) Attempt any **one** of the following : 5
- (1) What is Decoder? Explain 3-to-8 decoder in detail.
 - (2) What is multiplexer and de-multiplexer? Compare them in detail.
- 5 (A) Attempt the following : 4
- (1) Define: Register.
 - (2) Define: Counter.
 - (3) Define: Flip-Flop
 - (4) What is universal shift register?
- (B) Attempt any **one** of the following : 2
- (1) Synchronous counter v/s Asynchronous counter.
 - (2) Sequential circuit v/s Combinational circuit.
- (C) Attempt any **one** of the following : 3
- (1) Explain S-R flip-flop with truth table.
 - (2) Write a brief note on Ripple counter.
- (D) Attempt any **one** of the following : 5
- (1) Explain J-K Flip-Flop and D Flip-flop in detail.
 - (2) Write a note on shift register.