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PBU-1020

Seat No. _____

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

December - 2018

P-1020 : Computer Organization and Architecture

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 (a) Attempt the following : **4**

(1) Define : processor.

(2) 1024 MB = _____ KB

(3) What is MICR ?

(4) Convert decimal number 100 into equivalent binary number.

(b) Attempt any **one** of the following : **2**

(1) Perform $(1011001.0011)_2 + (101.1111)_2$

(2) Convert $(1001010.11011)_2$ to equivalent decimal number

(c) Attempt any **one** of the following : **3**

(1) Briefly explain touch screen

(2) What is scanner? Explain it mechanism in brief.

(d) Attempt any **one** of the following : **5**

(1) Explain floating point representation in detail.

(2) How the integer are stored in the memory? Explain signed, unsigned. 1's complement and 2's complement integer representation using 4 bits.

2 (a) Attempt the following : **4**

(1) What is gate?

(2) Explain truth table.

(3) Explain product term.

(4) What is Boolean algebra?

(b) Attempt any **one** of the following : **2**

(1) Explain : NAND gate in brief.

(2) Explain exclusive or gate in brief.

(c) Attempt any **one** of the following : **3**

(1) Draw circuit diagram of OR gate using NAND gate.

(2) Draw circuit diagram of AND gate using NAND gate.

(d) Attempt any **one** of the following : **5**

(1) Explain circuit minimization using karnaugh map.

(2) Explain sum of product. Explain or gate with gate, truth table with sop and generate Boolean expression.

3 (a) Attempt the following : **4**

(1) Define : Cache memory

(2) What is virtual memory ?

(3) Explain EPROM

(4) What is associative memory ?

(b) Attempt any **one** of the following : **2**

(1) Explain in brief : Instruction execution.

(2) Explain memory hierarchy in detail.

(c) Attempt any **one** of the following : **3**

(1) Explain architecture of PC with multiple types of buses.

(2) What is USB ? Explain in detail.

(d) Attempt any **one** of the following : **5**

(1) What is ALU ? Explain in detail

(2) Define addressing mode. List and explain each addressing in detail.

4 (a) Attempt the following : **4**

(1) What is integrated circuit ?

(2) What is combinational circuit ?

(3) Which logical circuit converts n binary input data into 2_n input lines ?

(4) What is the use of arithmetic circuit ?

(b) Attempt any **one** of the following : **2**

(1) Briefly explain half adder.

(2) Explain in brief : De-Multiplexer.

(c) Attempt any **one** of the following : **3**

(1) What is comparator ? Explain it in detail.

(2) Differentiate : Encoder Vs Decoder.

(d) Attempt any **one** of the following : **5**

(1) What is multiplexer? Explain it in detail with suitable example.

(2) What is binary adder/subtractor ? Explain in detail.

5 (a) Attempt the following : **4**

(1) Which flip flop is used to store the data in register ?

(2) Define : Registers

(3) Define : shift registers

(4) What is universal register ?

(b) Attempt any **one** of the following : **2**

(1) Explain JK flip flop in brief.

(2) Draw graphical symbol and characteristic table for SR flip flop.

(c) Attempt any **one** of the following : **3**

(1) Briefly explain binary counter.

(2) Explain D Flip flop in brief.

(d) Attempt any **one** of the following : **5**

(1) What is a counter ? Differentiate Synchronous Vs Asynchronous counter

(2) Explain the storage registers with parallel input in detail.
