

104/HH

003-007102

MCA. Sem.-I Examination

January-2014

CCA 1002 : Computer Organization

Faculty Code : 003

Subject Code : 007102

Time : 3 Hours]

[Total Marks : 70

1. Answer the following Multiple Choice Questions :

15

- (1) The number 102 written in binary is
(a) 0110011 (b) 110011
(c) 110110 (d) 1100110
- (2) In binary arithmetic, calculate $11010 - 1101$
(a) 101 (b) 1011
(c) 1101 (d) 10101
- (3) The idea of cache memory is based
(a) on the property of locality of reference
(b) on the heuristic 90-10 rule
(c) on the fact that references generally tend to cluster
(d) all of the above
- (4) The number 362 in base 8 is
(a) 255 (b) 363
(c) 472 (d) 552
- (5) The following number is in base 2.
1 1 1 0 0 1
What is its value in base 10 ?
(a) 22 (b) 39
(c) 57 (d) 114

- (6) The nand gates output will be low if two inputs are :
- (a) 00 (b) 01
(c) 10 (d) 11
- (7) The output of a logic gate is 1 when all its inputs are at logic 0, the gate is either
- (a) a NAND or an EX-OR (b) an OR or an EX-NOR
(c) an AND or an EX-OR (d) a NOR or an EX-NOR
- (8) DeMorgan's first theorem shows the equivalence of
- (a) OR gate and Exclusive OR gate.
(b) NOR gate and Bubbled AND gate.
(c) NOR gate and NAND gate.
(d) NAND gate and NOT gate
- (9) How many two - input AND and OR gates are required to realize $Y = CD + EF + G$?
- (a) 2,2. (b) 2,3.
(c) 3,3. (d) none of these
- (10) Which of the following holds the ROM, CPU, RAM and expansion cards ?
- (a) Hard Disk (b) Floppy Disk
(c) Mother board (d) None of the above
- (11) K-map for half adder is of _____ variables.
- (a) 2 (b) 3
(c) 4 (d) 5
- (12) The 8085 processor is based upon a _____ pin dip.
- (a) 40 (b) 45
(c) 20 (d) 25
- (13) The o/p of half adder is in the form of
- (a) Sum (b) Carry
(c) Sum and Carry (d) None of these

(14) Karnaugh map (K-map) technique provides a systematic method for simplifying _____.

- (a) Multiplexers (b) Logic gates
(c) Boolean expressions (d) None of these

(15) How is a J-K flip-flop made to toggle ?

- (a) $J = 0, K = 0$ (b) $J = 1, K = 0$
(c) $J = 0, K = 1$ (d) $J = 1, K = 1$

2. Attempt any **five** of the following :

15

- (1) Explain SR Flip.
(2) What is the function of Main Memory ?
(3) What is a Virtual Memory ? How it differs from cache memory ?
(4) What do you understand by the term instruction code ?
(5) Define De Morgan's theorem.
(6) Describe XOR Gate with its diagram.

3. Attempt any **three** of the following :

15

- (1) Show how to implement a full adder. by using half adders ?
(2) Design a 2 bit counter using D Flip-Flop.
(3) Describe the addressing mode of computer instructions.
(4) Design a half-adder as a two-level AND-OR circuit.

4. Attempt any **two** of the following :

15

- (1) Design a 4-bit combinational circuit decremented using four full adders.
(2) Differentiate between virtual and cache memory.
(3) Design a 16-bit Multiplexer and De-Multiplexer.

5. Attempt any **one** of the following :

10

- (1) Explain the different types of mapping procedures in the organization of cache Memory with diagram.
 - (2) Why read and write is control lines in a DMA controller bidirectional ? Under what Condition and for what purpose are they used as inputs ?
-

Water Mark Text EDC - 112. © 08-01-2014 13:31:15



003-007102

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

January - 2012

MCA - CCA - 1002 : Computer Organization

Faculty Code : 003

Subject Code : 007102

Time : 3 Hours]

[Total Marks : 70

Q.1 Answer the following multiple choice questions.

[15]

- (1) A radix K number system requires how many different symbols to represent the digits 0 to K-1?
 - (a) K
 - (b) K - 1
 - (c) K + 1
 - (d) 1
- (2) Which of the following number systems has exactly one representation for number 0?
 - (a) Signed magnitude
 - (b) 1's Complement
 - (c) 2' complement
 - (d) Excess 128
- (3) In IEEE floating point formats how many bits are used to store exponent for a double precision floating point number?
 - (a) 1
 - (b) 8
 - (c) 11
 - (d) 15
- (4) Which of the following gate is called an inverter?
 - (a) AND
 - (b) OR
 - (c) NOT
 - (d) XOR
- (5) Which of the following gate is a universal gate??
 - (a) AND
 - (b) XOR
 - (c) NOT
 - (d) NAND
- (6) Which of the following is not a type of a bus?
 - (a) PCI
 - (b) EISA
 - (c) ISA
 - (d) None of above
- (7) Which of the following is effectively a nerve center that sends control signals to other units and senses their states??
 - (a) Memory
 - (b) Arithmetic and Logic Unit
 - (c) Clock
 - (d) Control Unit
- (8) A non-inverting buffer has not which of the following signal?
 - (a) A data input
 - (b) A data output
 - (c) A control input
 - (d) A control output

- (9) Which of the following statements is true regarding to memory?
 (a) A flip-flop and latch both function same
 (b) Flip-flop is edge triggered and latch is level triggered
 (c) Flip-flop is level triggered and latch is edge triggered
 (d) Either of flip-flop and latch is a combinational circuit
- (10) Which of the following is not the addressing mode?
 (a) Intermediate addressing
 (b) Direct addressing
 (c) Register addressing
 (d) Immediate addressing
- (11) Which of the following circuit takes an n-bit number as input and uses it to select exactly one of the 2^n output lines??
 (a) Multiplexer
 (b) Encoder
 (c) Demultiplexer
 (d) Decoder
- (12) UART stands for
 (a) Universal Asynchronous Retrieval Transmitter
 (b) Universal Asynchronous Receiver Transfer
 (c) Universal Asynchronous Receiver Transmitter
 (d) Universal Asynchronous Retrieval Transfer
- (13) Locality of reference is related to which of the following memory?
 (a) Main memory
 (b) Auxiliary memory
 (c) Cache memory
 (d) Virtual memory
- (14) Which of the following indicates that the slave is ready to accept data from the master in Pentium II logical pinout?
 (a) RS#
 (b) DRDY#
 (c) DBSY#
 (d) TRDY#
- (15) Which of the following register contains the data to be written into or read out of the specified location?
 (a) MAR
 (b) MDR
 (c) PC
 (d) IR

Q.2 Attempt any **five** of the following

[15]

- (1) Convert the given binary number 1001101001 into its equivalent decimal, octal and hexadecimal number.
- (2) Find out the IEEE single precision floating point representation for a number 5.375.
- (3) Simplify the following Boolean expression using karnaugh map and generate a circuit for it.

$$A B C + \bar{A} B C + A \bar{B} C + A B \bar{C}$$
- (4) Explain full adder with truth table.
- (5) Explain fetch-decode-execute cycle.
- (6) What is USB? Explain the goals and benefits of it.

Q.3 Attempt any **three** of the following. [15]

- (1) What is the task of ALU? Explain 1-bit ALU with circuit diagram.
- (2) What is bus arbitration? Explain centralized and decentralized bus arbitration.
- (3) What is decoder? Explain 3-to-8 decoder circuit.
- (4) Explain the logical pinout of Pentium II.

Q.4 Attempt any **two** of the following [15]

- (1) What is register? Explain universal register with circuit diagram.
- (2) Explain the memory organization for a 4 X 3 memory with logic diagram.
- (3) What is bus? List and explain different types of buses in brief and explain the organization of a computer system with multiple buses.

Q.5 Attempt any **one** of the following [10]

- (1) What is flip-flop? Explain SR flip flop with circuit diagram in detail. Briefly discuss the race condition.
 - (2) Define : addressing mode. List and explain each addressing in detail. Briefly explain cache and virtual memory.
-



003-007102

Seat No. _____

M.C.A. (C.B.C.S.) (Sem. I) Examination

January - 2011

CCA1002 : Computer Organization

(New Course)

Faculty Code : 003

Subject Code : 007102

Time : 3 Hours]

[Total Marks : 70

- Instructions :**
- (1) Attempt all the questions.
 - (2) Figures to the right indicate full marks.
 - (3) Assume suitable additional data, if required.

1 Answer the following multiple choice questions : 15

- (1) The Left Most Digit in Decimal Number System Called as
 - (A) Most Significant Digit
 - (B) Major Strong Digit
 - (C) Main Subjective Digit
 - (D) Mega Sensitive Digit
- (2) A Binary Digit is called as
 - (A) Byte
 - (B) Bit
 - (C) Nibble
 - (D) None of above
- (3) Binary Value of $(163.875)_{10}$ is
 - (A) $(1010011.111)_2$
 - (B) $(1010111.111)_2$
 - (C) $(1010110.111)_2$
 - (D) $(10101010.101)_2$
- (4) Calculate Binary Arithmetic Operation for :
 $(1011)_2 + (10010)_2 = ?$
 - (A) $(10110)_2$
 - (B) $(10011)_2$
 - (C) $(11101)_2$
 - (D) $(001010)_2$

- (5) Calculate Binary Arithmetic Operation for :
 $(00101010)_2 \div (00000110)_2 =$
 (A) $(00101010)_2$
 (B) $(0010)_2$
 (C) $(100)_2$
 (D) $(111)_2$
- (6) Which Number system is not a positional number System ?
 (A) Binary
 (B) Octal
 (C) Roman
 (D) Decimal
- (7) Decimal Value for the given $(4057.06)_8$ is
 (A) $(2095.0937)_{10}$
 (B) $(209.37)_{10}$
 (C) $(101010.11)_{10}$
 (D) $(5093.7)_{10}$
- (8) What is the Logic which controls a staircase light associated with two switch A and B located at the bottom and top of the staircase respectively ?
 (A) OR
 (B) AND
 (C) X-OR
 (D) X-NOT
- (9) How many NOR Gates requires to obtain AND Operation ?
 (A) 2
 (B) 3
 (C) 4
 (D) 5
- (10) Number of rows in the truth table of a 4-input gate is
 (A) 4
 (B) 8
 (C) 12
 (D) 16
- (11) Which of the following gate called Inverter ?
 (A) AND
 (B) OR
 (C) NAND
 (D) NOT
- (12) ALU stands for
 (A) All Language Unit
 (B) Arithmetic and Language Unit
 (C) Arithmetic and Legal Unit
 (D) Arithmetic and Logical Unit

- (13) The code used for lagelling cells of the K map is
 (A) Natural BCD
 (B) Gray
 (C) Hexadecimal
 (D) Binary
- (14) A flip-flop has two output which are
 (A) Always 0
 (B) Always 1
 (C) Always complementary
 (D) All of the above states
- (15) A flip-flop can be made using
 (A) AND, OR and NOT gates
 (B) NAND Gates
 (C) NOR Gates
 (D) Any of the above

2 Attempt any five of the following : 15

- (1) Explain NAND gate with its applications
- (2) State the De Morgan's theorem for three variables in both the forms and give the proof for one by the method of perfect induction
- (3) Perform the subtraction with unsigned decimal numbers by taking the 10's complement: 967-251
- (4) What is ISA Bus ?
- (5) Explain USB in short. Give applications of USB
- (6) Differentiate : Cache Memory v/s Main Memory

3 Attempt any three of the following : 15

- (1) Explain Cache Memory and Virtual Memory
- (2) Simplify the following Boolean Expressions :
 (A) $A + B[AC + (B + C')D]$
 (B) $(A + B'C)(AB' + ABC)$
- (3) List applications of Combinational Circuit with its importance in Digital Equipments
- (4) Write a short note on : Virtual Memory.

4 Attempt any two of the following : 15

- (1) Why NAND and NOR Gates called as Universal Gates ?
- (2) Explain BCD counter with examples
- (3) Design a counter, using three JK flip-flops X, Y and Z, which counts as 0, 7, 3, 2, 5, repeat.

5 Attempt any **one** of the following : 10

- (1) Write a Brief Explanation of De-Multiplexer
- (2) Explain D-Flip Flop and Compare it with SR Flip Flop.