DHARMSINH DESAI UNIVERSITY, NADIAD

FACULTY OF MANAGEMENT AND INFORMATION SCIENCE

MCA SEMESTER I - FIRST SESSIONAL EXAMINATION

SUBJECT: COMPUTER ORGANIZATION AND ARCHITECTURE

Examination : M.C.A. - Semester – I

Date : 31/12/2020 Day : Thursday

Time : 02:15pm To 03:30pm Max. Marks : 36

Q.1 Do as directed. 12

1. The expression for Absorption law is given by _____
   a. A + AB = B
   b. AB + AA' = A
   c. A + B = B + A
   d. A + AB = A
2. According to identity law: A .1 = ?
   a. A
   b. 1
   c. 0
   d. A'
3. DeMorgan's theorem states that _____.
   a. (A + B)' = A' * B
   b. (AB)' = A' + B'
   c. A' + B' = A'B'
   d. (AB)' = A' + B
4. In boolean algebra, the OR operation is performed by which properties?
   a. Associative properties
   b. Commutative properties
   c. Distributive properties
   d. All of the Mentioned
5. Which of the following statements is true ?
   a. (A + B) (A + C) = AC + BC
   b. (A + B) (A + C) = AB + C
   c. (A + B) (A + C) = A + BC
   d. (A + B) (A + C)= AC + B
6. How many AND gates are required to realize Y = CD + EF + G?
   a. 4
   b. 5
   c. 3
   d. 2
7. The NOR gate output will be high if the two inputs are _____
   a. 00
   b. 01
   c. 10
   d. 11

8. How many two input AND gates and two input OR gates are required to realize Y = BD + CE + AB?
   a. 3,2
   b. 4,2
   c. 1,1
   d. 2,3
9. The decimal number 10 is represented in its BCD form as _____
   a. 10100000
   b. 01010111
   c. 00010000
   d. 00101011
10. Code is a symbolic representation of _____ information.
   a. Continuous
   b. Discrete
   c. Analog
   d. Both continuous and discrete
11. Zero represent low signal.
   a. True
   b. False
12. The program and data prepared by the user are transferred into memory by means of an input device such as a keyboard.
   a. True
   b. False

Q.2 **Attempt Any THREE from the following questions.** **[12]**

1.Calculate hamming code for 1111001

2. Perform BCD addition for the following.
   1. 766 + 168
   2. 359 + 339

3.Find the following.
   1. 10's complement and 11's complement of $1A5_{11}$
   2. 5's complement and 6's complement of 445_{6}

4. Draw the block diagram of digital computer. State the purpose of each component.

Q.3 (A) Perform the following conversion [06]
1. $(567.20)_8$ = (_____)$_{10}$
2. $(7B6CE.8D)_{16}$ = (_____)$_2$
3. $(863.25)_{10}$ = (_____)$_2$

(B) Explain De Morgan Theorem with truth table. [06]

OR

Q.3 (A) Perform the following conversion [06]
1. $(588.30)_{10}$ = (_____)$_8$
2. $(10110011001100.110100)_2$ = (_____)$_{16}$
3. $(1100110.11)_2$ = (_____)$_{10}$

(B) Simplify the given Boolean expression [06]
1. (A+AB) = ?
2. C + BC = ?