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SARDAR PATEL UNIVERSITY
BCA (Ist Semester) (CBCS) Examination
2016
Tuesday, 5th April
2.30 p.m. to 4.30 p.m.
US01EBCA01 : Digital Computer Electronics

Total Marks: 70

Q:1 **Select an appropriate answer for the following.** **[10]**

1. De Morgan's first theorem says that a NOR gate is equivalent to a _____.
   a). AND bubbled b). bubbled NOR c). bubbled OR d). bubbled AND

2. The _____ gate has two or more input signals. All inputs must be high to get a high output.
   a) OR b) NAND c) NOR d) AND

3. A+A'B+A'B'=?
   a). 1 b). 0 c). A d). A'

4. In k-map, pair eliminates _____ variable.
   a)One b) Two c) Three d) Four

5. In Comparator, _____ gate is use for comparing bits in word.
   a) XOR b) AND c) XNOR d) NOR

6. A _____ is a memory element that stores a binary digit.
   a) binary adder b) decoder c) flip-flop d) multiplexer

7. A combinational circuit that performs the arithmetic addition of two bits is called_____
   a) Full Adder b) Half Adder c) Binary Adder d) Decoder

8. Half adder is logic CKT that adds_____Digit at a time.
   a)1 b)2 c) 3 d) 4

9. In D flip-flop, when CLK is low then input is _____.
   a) high b) low c) Don't care d) Not change

10. A _____ register is the simplest kind of register; all it does store a digital word.
    a) shift left b) shift right c) buffer d) simple

[P.T.O]

Q:2 **Answer the following questions. (Attempt any ten)** **[20]**

1. Explain XOR gate.
2. Write truth table for : ABC +A'B'C'
3. Explain NAND gate.
4. Simplify using k-map F(A,B,C)=E(1,2,5)
5. Describe pair in k-map
6. Define decoder in short.
7. Describe binary adder in short..
8. Draw the circuit diagram for 4x1 Multiplexer.
9. 1100 - 0011 =? Perform using Binary subtractor.
10. Draw the circuit diagram for Controlled Buffer Register.
11. Explain Shift-Right Register.
12. Draw a timing diagram of Shift-Left Register

Q:3 Explain Commutative and Distributive laws using truth table and circuit diagram. **[10]**

OR

Q:3 Explain de morgan's first and second theorem. **[10]**

Q:4

A. Explain comparator with example. **[05]**
B. What is k-map? Explain Quad and octet with example. **[05]**

OR

Q:4 **A.** Explain 8x3 line encoder in detail. **[05]**
B. Simplify this using k-map $F(A,B,C,D)=\sum(1,3,5,6,8,11,15)$ **[05]**

Q:5

A. Describe binary subtractor in detail. **[05]**
B. Explain half adder in detail. **[05]**

OR

Q:5 **A.** Explain full adder in detail. **[05]**
B. Explain 8x1 Multiplexer in detail. **[05]**

Q:6

A. Explain ring counters in detail. **[05]**
B. Explain D flip-flop in detail. **[05]**

OR

Q:6 **A.** Explain Controlled Buffer Register. **[05]**
B. Explain Shift Left Register with diagram. **[05]**

~*~*~*~*~*~ Best Of Luck ~*~*~*~*~*~