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SARDAR PATEL UNIVERSITY

S.Y. B.Sc. (SEM – III) Examination
US03ECSC01 : Digital Computer Electronics
Date : 28th November, Thursday, 2013
Time : 2:30 pm to 4:30 pm Max. Marks : 70

Q.1 Select correct option from the following multiple choice questions: [10]

1. What is the output of OR gate, if two inputs are 0 and 1?
   (A) 0 (B) 1
   (C) 2 (D) 4
2. A NAND gate is equivalent to an AND gate plus a _____ gate put together.
   (A) NOR (B) NOT
   (C) AND (D) OR
3. Two input OR gate gives low output, if A=____ and B=____. (A and B are input signals)
   (A) 0, 0 (B) 0, 1
   (C) 1, 0 (D) 1, 1
4. In K-Map, _____ function is also known as Minterms.
   (A) SOP (B) POS
   (C) Hybrid (D) Both SOP and POS
5. A K-Map with 4 variables has _____ cell.
   (A) 2 (B) 4
   (C) 8 (D) 16
6. Comparator produce _____ output, if both input word A and B are equal.
   (A) 0 (B) 1
   (C) 2 (D) 4
7. A combinational circuit that performs the arithmetic addition of three bits is called _____.
   (A) Full Adder (B) Half Adder
   (C) Binary Adder (D) Decoder
8. Multiplexer is also known as _____.
   (A) Data Reverse (B) Data Inverter
   (C) Data Remover (D) Data Selector
9. The basic storage element in digital system is _____.
   (A) Flip Flop (B) Counter
   (C) Multiplexer (D) Encoder
10. D Flip Flop has only _____ input other than clock input.
    (A) 1 (B) 2
    (C) 3 (D) 4

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Q. 2 Write short answer questions : Attempt any Ten [20]

1. Prove that A + (B C) = (A+B) (A+C) using truth table.
2. Draw the circuit diagram for F = (A B) (A+ B' + C') (B' C').
3. Write truth table for (A+B)+C = A+(B+C).
4. What is Minterm and Maxterm in K-Map?
5. What is Octet in K-Map?
6. What is SOP?
7. What is Data Selector?
8. Draw the diagram of Binary Adder.
9. Draw the block diagram of 4X1 line Multiplexer.
10. What is Shift Right?
11. What is Flip Flop?
12. Define Ring Counter.

Q.3 What is Gate? List all Gates. Explain NAND Gate and NOR Gate in detail. [10]

OR

Q.3 State and Prove the First and Second De-Morgan's Theorem. [10]

Q.4 A What is Encoder? Explain 8 X 3 line Encoder. [5]
B. Simplify this using K-Map F(A,B,C,D) = ∑(3,7,11,12,13,14,15). [5]

OR

Q.4 A. What is Decoder? Explain 3 X 8 line Decoder. [5]
B. What is Comparator? Explain Comparator in detail. [5]

Q.5 A. What is Half Adder? Explain in detail. [5]
B. Explain Binary Adder in detail. [5]

OR

Q.5 A. What is Full Adder? Explain in detail. [5]
B. Explain 8 X 1 line multiplexer in detail. [5]

Q.6 A. What is Buffer Register? Explain Control Buffer Register. [5]
B. Explain Shift Left and Shift Right Register in detail. [5]

OR

Q.6 A. Explain Ring Counter in detail. [5]
B. Explain D Flip Flop in detail. [5]

—X—X—