

[71/A-30]

STAR No. ....

No. of Printed Pages : 02

Sardar Patel University  
F.Y.BCA (SEM-1)(CBCS) EXAMINATION 2019

02:00 p.m. to 04:00 p.m.

US01EBCA01 : Digital Computer Electronics

13/11/2019, Wednesday

Maximum Marks : 70

Note: - Answers of all the questions (including multiple choice questions) should be written in the provided answer book only.

Q.1 Multiple choice questions:

[10]

1. An invert gate is also called a \_\_\_\_\_ gate.  
A. AND B. OR C. NAND D. NOT.
2. The NOR gate has two or more input signals. If all inputs are \_\_\_\_\_, the output is high.  
A. Low B. High C. Both A and B D. None.
3. In k-map, pair eliminates \_\_\_\_\_ variable.  
A. One B. Two C. Three D. Four.
4.  $A+A'B+A'B'=?$   
A. 1 B. 0 C. A D. A'
5. A \_\_\_\_\_ is a combinational circuit that converts binary information from the n coded inputs to a maximum of  $2^n$  unique outputs.  
A. Half Adder B. Decoder C. Encoder D. Comparator.
6. A gate is a logic circuit with one or more input signals but only \_\_\_\_\_ output signal.  
A. One B. Two C. Three D. None.
7. In Comparator, \_\_\_\_\_ gate is use for comparing bits in word.  
A. XOR B. AND C. NOR D. XNOR.
8. In D flip-flop, when CLK is high then output is \_\_\_\_\_.  
A. High B. Low C. Same as input D. None.
9. In D flip-flop, when CLK is low then input is \_\_\_\_\_.  
A. High B. Low C. Don't Care D. None.
10. A multiplexer also called a \_\_\_\_\_.  
A. Data Multiplier B. Data Selector C. Data Remover D. None.

Q.2 Attempt any Ten out of Twelve.

[20]

1. Define Gate.
2. Explain XNOR, OR gate..
3. Write truth table for :  $A'B+B'C$
4. Simplify Boolean expression and draw circuit.  $AB'+C'D+AB+CD$
5. Describe Octet, Pair and Quads in k-map.
6. Explain 2 Variable K Map.
7. Define Encoder in short.
8. Simplify using K-Map  $F(A,B,C)=\Sigma(2,3,5)$
9. Describe Half Adder in short.
10. Describe Full Adder in short.
11. Define Controlled Buffer register.
12. Draw Circuit for D flip-flop.

(1)

C.P.T.02

- Q.3 (a) Explain Truth table with appropriate example. [5]  
 (b) Prove that  $ABC'+ABC=AB$  using truth table. [5]  
**OR**
- Q.3 (a) Explain **XOR, OR, NAND** gate [5]  
 (b) Simplify this Boolean expression and draw circuit:  $ABC'+ABC+A'BC$  [5]
- Q.4 (a) Simplify this using K-Map  $F(A,B,C,D)=\sum(1,2,3,4,5,6,8,10,11,12,13,15)$  [5]  
 (b) Explain **8x3 Line Encoder** in detail. [5]  
**OR**
- Q.4 (a) Simplify this using K-Map  $F(A,B,C,D)=\sum(2,4,5,6,8,10,15)$  [5]  
 (b) Explain **Comparator** with example. [5]
- Q.5 (a) Explain **Half Adder** in detail. [5]  
 (b) Explain **Binary Adder-Sub tractor** in detail. [5]  
**OR**
- Q.5 (a) Explain **Full Adder** in detail. [5]  
 (b) Explain **4x1 Multiplexer** in detail. [5]
- Q.6 (a) Explain **D flip-flop** in detail. [10]  
**OR**
- Q.6 (a) Explain **Shift left** and **Shift right** register. [10]

