

## DISTANCE EDUCATION

B.C.A. DEGREE EXAMINATION, MAY 2008.

## ELECTRONIC DEVICES AND DIGITAL CIRCUITS

(upto 2002)

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. (a) Convert the following binary numbers to decimal numbers (10)

(i) 00111

(ii) 11001

(iii) 10110

(iv) 11110

(b) Convert each of the following Hexa decimal numbers to binary number (10)

(i) FF

(ii) ABC

(iii) CD42

(iv) F329.

2. (a) Construct a three input NOR Gate and verify its truth table. (10)

(b) Construct a three input NAND Gate and verify its truth table. (10)

3. (a) Prove Demorgan's first theorem using Logic Circuit and truth table. (10)
- (b) Explain the commutative, Associative, and Distributive laws of boolean theorems. (10)
4. (a) Draw the circuit diagram of half adder, truth table and with the boolean expressions for sum and carry. (10)
- (b) Draw the circuit diagram of full adder, truth table and write the boolean expressions. (10)
5. (a) Differentiate between R-S and J-K flip-flops. (10)
- (b) With neat diagram Explain the shift-left register with an example. (10)
6. (a) Draw the circuit diagram of synchronous counter and state the advantages of its. (10)
- (b) Draw the circuit diagram of Ring counter and why the circuit is called Ring counter. (10)
7. (a) Draw and explain the cross-section of an n-channel J-FET. (10)
- (b) Draw and explain the cross-section of an n-channel MOSFET. (10)
8. (a) What is an op-amp? List the characteristics of an ideal op-amp? (10)
- (b) What is a differential amplifier? Draw the circuit of op-amp as a differential amplifier and derive the values of  $Y_0$ . (10)