

**B.TECH. IN COMPUTER SCIENCE AND
ENGINEERING (BTCSEVI)**

Term-End Examination

June, 2011

BICS-009 : LOGIC DESIGN

Time : 3 hours

Maximum Marks : 70

Note : Attempt *any five* questions. All questions carry *equal marks*.

1. (a) Realize the Basic Logic gate using two input NAND Gate. 5

(b) Minimize the following function by Quine-McClusky method 9

$$f(A, B, C, D) = \sum_m (0,2,3,6,7,8,9,10,13)$$

2. (a) Using four-Input MUX, Implement the following function :- 7

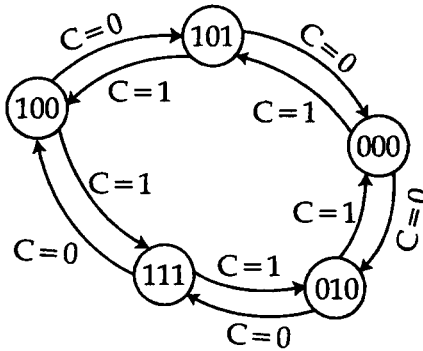
$$F(A, B, C) = \sum_m (0,2,3,5,7)$$

Control variable A and B

(b) Explain the operation of 4 I/P priority Encoder. 7

3. (a) Explain the method used for fast addition and Draw its circuit. 7
- (b) Draw and write the expression for a 4-bit parallel subtractor using full adder. 7
4. (a) Discuss the race - around condition and explain the operation of the circuit of its solution. 3+6
- (b) Using TFF, Design RSFF. 5
5. (a) Explain the different modes of operation of a shift register with diagram. 7
- (b) Implement MOD-8 Synchronous counter with SR FFs. 7
6. (a) An asynchronous circuit is described by the following excitation and output function 7
- $$Y = x_1x_2 + (x_1 + x_2) y ; Z = y$$
- (i) Draw the logic diagram and
- (ii) Derive the transition table, output map, flow table

- (b) Implement the state Transition diagram shown in fig below using T FFs. 7



7. (a) With neat diagram, explain R-2 R ladder type D/A converter. 7
- (b) Explain with neat diagram an open - collector TTL NAND gate. 7
