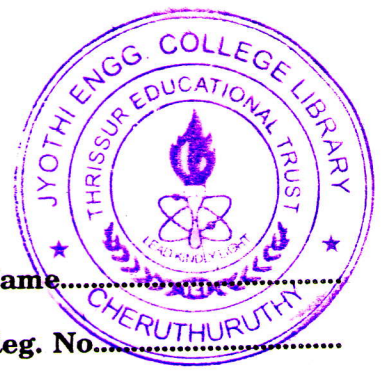


**D 51490**

Name.....  
Reg. No.....



**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, DECEMBER 2008**

**CS/IT 04 305 – SWITCHING THEORY AND LOGIC DESIGN**

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

- I. (a) Discuss the postulates of Boolean Algebra.  
(b) Simplify the function  $Y = B(\bar{A} + \bar{C}) + \bar{A}\bar{B}$  and draw the logic circuit for the simplified function.  
(c) Explain why NOR gate is known as an universal gate.  
(d) Derive logic expressions for sum and carry of a full adder.  
(e) Write a brief note on Fault Classes.  
(f) What do you mean by Design for Testability?  
(g) How will you modify a SR flip-flop to a JK flip-flop?  
(h) Explain the basic concept of a Shift Register.

(8 × 5 = 40 marks)

- II. (a) Reduce the following Boolean Function using Quine McCluskey method.

$$F(A, B, C, D, E) = \Sigma(0, 1, 4, 5, 6, 7, 12, 18, 19, 22, 23, 28, 31)$$

(15 marks)

- (b) Write short notes on the following : (i) Electronic Gates and mechanical contacts ; (ii) Normal and canonical forms.

(10 + 5 = 15 marks)

*Or*

- III. (a) With the help of neat diagram explain the principle of look ahead adder. What are its advantages?

*Or*

- (b) Explain the differences between multiplexers and Demultiplexers with the help of neat logic diagrams.

(15 marks)

- IV. (a) Explain the path sensitisation method with an example.

(15 marks)

*Or*

- (b) Write short notes on the following : (i) Fault Diagnosis and Testing ; (ii) Essential prime cube theorem.

(8 + 7 = 15 marks)

- V. (a) Design a 4-bit ripple up counter and explain.

(15 marks)

*Or*

- (b) Write short notes on the following : (i) Triggering of Flip-Flops ; (ii) Synchronous counters.

(8 + 7 = 15 marks)

[4 × 15 = 60 marks]