D 2338 (Pages 2) Name.....

Reg. No.....

# THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2009

## CS/IT 04 305—SWITCHING THEORY AND LOGIC DESIGN

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

I (a) Write a brief note on self dual function.

(b) Differentiate between normal and connonical forms with the help of examples.

(c) Implement the logic function $Y = AB + A\bar{C}$ using NAND gates only.

(d) Explain the difference between a multiplexer and demultiplexer.

(e) Discuss the importance of testing in digital circuit design.

(f) Explain about the essential prime cube theorem.

(g) Explain the basic difference between a latch and a Flip-Flop.

(h) Write a brief note on ripple counters. (8 × 5 = 40 marks)

II. (a) Reduce the following function using Quine McClusky method :

$F(A, B, C, D, E) = \sum (0, 1, 2, 8, 9, 15, 17, 21, 24, 25, 27, 31)$

(15 marks)

*Or*

(b) (i) Simplify the following expression using K-Map :

$F(A, B, C, D) = \sum (1, 5, 7, 8, 9, 10, 11, 14, 15)$

(8 marks)

(ii) Write short notes on switching Algebra. (7 marks)

III. (a) Explain about encoders and decoders in detail. (15 marks)

*Or*

(b) Explain the principle of operation of parallel adder and look ahead adder. (15 marks)

IV. (a) Discuss about the Fault Tolerant techniques. (15 marks)

*Or*

Turn over