

Code No: 54010

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2016

SWITCHING THEORY AND LOGIC DESIGN

(Common to EEE, ECE, BME, ETM)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) i) Convert $(5CA.CB)_{16}$ to $(\quad)_{8}$.
 ii) Convert 10111100_2 to gray code
 iii) Subtract $743_{10} - 249_{10}$ by using 2's complement method.
 b) Explain the 12-bit Hamming code with one example. [8+7]
- 2.a) Define universal gates and explain its importance used in digital system with example.
 b) Realization of four input and gate with two input NOR gate with example. [8+7]
- 3.a) Simplify the following using K-map method.
 $F(A, B, C, D, E) = \Sigma(0, 2, 4, 6, 9, 11, 13, 15, 17, 21, 25, 27, 2, 31)$
 b) Implement the following function with NAND gates.
 $F(x, y, z) = \Sigma(0, 2, 4, 6)$ [8+7]
- 4.a) Define Multiplexer and explain the procedure to implement 32×1 MUX by Using 4×1 Multiplexers.
 b) Design 4-bit digital comparator with neat sketch and explain its operation. [8+7]
- 5.a) Implement $f(A,B,C,D) = \Sigma(0,1,4,5,6,7,9,10,12,13,15)$ using PLA and explain its procedure.
 b) Write the comparisons between PAL, PLA and PROM. [8+7]
- 6.a) What is flip-flop? How can be used in sequential circuit and explain in detail?
 b) Design a synchronous modulo-12 counter using NAND gates and JK flip flops. [8+7]
- 7.a) Explain the state machine capabilities and limitations in detail.
 b) Draw state diagrams of a sequence detector which can Detect 0101. [8+7]
- 8: Write short notes on following terms:
 a) ASM charts
 b) Binary multiplier. [8+7]