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BIEL-003

00800

B. Tech. ELECTRONICS AND COMMUNICATION ENGINEERING

Term-End Examination

December, 2010

BIEL-003 : DIGITAL ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **seven** questions in all. Assume any missing data suitably.*

1.	(a)	Find the 1's and 2's complement of the given number $(110011.01)_2$	5
	(b)	Convert decimal number 57 in to (i) Excess - 3 code (ii) Gray code	5
2.	(a)	Minimize the following logic functions and realize using NAND gates $f(A,B,C,D) = \Sigma m(1, 3, 5, 8, 9, 11, 15) + d(2,13)$	5
	(b)	State and prove De - Morgan's theorem.	5
3.	(a)	Design a 4 - digit BCD adder using 7483 binary adder.	5
	(b)	Draw logic diagram of full subtractor and explain its working using Truth Table.	5
4.	(a)	Realize the following Boolean expression using a 8:1 multiplexer. $f(A,B,C) = \overline{A}\,\overline{B}\,C + \overline{A}B\overline{C} + A\overline{B}\,C + ABC.$	5

(b) Draw the logic circuit of Edge triggered JK flip flop and explain its working using truth table. 5

5. Draw the circuit of a 4 bit ripple counter and explain its working. Also draw its timing diagram. 10

6. (a) Draw the circuit diagram of tristate TTL and explain its working. 7

(b) What are the points to be kept in view while interfacing one logic family to another logic family ? 3

7. Draw a TTL NAND gate circuit with totem pole output and explain its working. Why should it not be used for wired AND connection ? 10

8. (a) Differentiate between static and dynamic RAM. 5

(b) Use 16×8 bit PROM to generate the following function. $F = \Sigma m\ (0, 1, 2, 3, 8, 14)$ 5

9. Design an Excess 3 - to - BCD code converter using a 10

(i) PLA (ii) (PAL)

10. Write short notes on (*Any two*) : 5x2=10

(i) Serial - input, Serial - output, shift register.

(ii) ASCII codes

(iii) Algorithmic State Machines (ASM)