2014
B.E. (Electronics and Communication Engineering)
Second Semester
EC-203: Digital Design

Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1. (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

		Section A	
1	i.	What is universal gate? Realize OR gate using universal gates.	
	ii.	Differentiate minterm and maxterms in a Boolean expression.	
	iii.	What is an inhibited state and when occurs in a flip-flop?	
	iv.	Which one is the fastest A/D converter and why?	
	v.	Which one is the fastest bipolar logic family and why?	10
		Section B	
2	a)	Minimize and design the function $\sum m(0,1,6,7,8,9,13,14,15)$ using only minimum number of NAND gate if complementary inputs are also available.	5
	b)	What is race around condition in a flip-flop? How it can be avoided?	5
3	a)	Implement a full adder with decoder and gates.	5
	b)	Design a four bit magnitude comparator.	5
4	a)	Convert T to D and J-K to S-R flip-flops.	5
	b)	List the PAL programming table for BCD to excess-3 code converter.	5
		Section C	
5	a)	Design a 3-bit synchronous counter to count sequence 0,2,4,5,7 and repeat using J-K flio-flop.	5
	b)	What is bidirectional shift register? Draw and explain a 4-bit bidirectional shift register.	5
6	a)	What are the drawbacks of weighted-resistor D/A converter? How these drawbacks can be overcome using R-2R ladder type D/A converter?	5
	b)	Draw and explain 2-input CMOS NAND and NOR gates.	5
7	a)	Explain construction and working of TSL inverter.	5
	b)	Differentiate a ring counter and twisted ring counter. Explain working of 4-bit Johnson's counter.	5

x-x-x