S.E (EXTC) SEM: III (CBSGS) NOV-DEC 2013
Digital Electronics
4/12/13

16 : 2nd half.13-Avi(at)

Con. 8622-13. **GX-12122**

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Out of **remaining** questions, attempt any **three** questions.
(3) **Assume** suitable additional **data if required**.
(4) **Figures** in brackets on the **right hand side** indicate **full** marks.

1.	(A)	**Compare combinational circuits with sequential circuits.**	(05)
	(B)	**Compare TTL with CMOS logic families.**	(05)
	(C)	**Compare SRAM with DRAM.**	(05)
	(D)	**Compare FPGAs with CPLDs.**	(05)
2.	(A)	**State and prove De Morgan's theorem.**	(10)
	(B)	**Using Quine McClusky method, minimize the following:** $F(A,B,C,D) = \sum m(0,1,3,7,8,9,11,15,22,24,27) + d(6,16)$.	(10)
3.	(A)	**Implement the following Boolean equation using single 8:1 MUX and few logic gates:** $F(A,B,C,D) = \sum m(0,1,3,4,8,9,15)$.	(10)
	(B)	**Write $(32)_{10}$ into its BCD code, and Ex-3 code.**	(05)
	(C)	**Implement $Y = A + \overline{B}C$ using only NOR gates.**	(05)
4.	(A)	**Draw a neat circuit of BCD adder using IC 7483 and explain.**	(10)
	(B)	**It is desired to develop the circuit for controlling a lamp on a staircase between 1st and 2nd floor of a building. Each floor is having only one switch. If a lamp is made 'ON' using switch of 1st floor, one should be able to switch it 'OFF' using a switch of 2nd floor and vice-versa. Design the circuit for the same. Write the VHDL code for the same.**	(10)
5.	(A)	**What is shift register? Explain any one type of shift register. Give its application.**	(10)
	(B)	**Convert D type flip flop into T type flip flop.**	(05)
	(C)	**Compare PAL with PLA.**	(05)
6.	(A)	**Design a synchronous counter using D type flip flops for getting the following sequence: 0 – 2 – 4 – 6 – 0. Take care of lockout condition.**	(10)
	(B)	**Explain any one application of Johnson counter.**	(05)
	(C)	**Draw the block diagram of internal architecture of XC9500 family CPLD and explain in brief.**	(05)
