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BIEL-003

02669

B. Tech. ELECTRONICS AND COMMUNICATION ENGINEERING

Term-End Examination

June, 2011

BIEL-003 : DIGITAL ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

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

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1. (a) State and prove De Morgan's Theorems. **5**

(b) Convert the gray code number 110011 to binary. **5**

2. (a) Minimize the following function using K - map and realize using minimum number of gates. **5**

$F(A, B, C, D) = \sum m(0, 1, 2, 3, 11, 12, 14, 15)$

(b) Design a half adder circuit using gates. **5**

3. (a) Realize the following function using 8 : 1 multiplexer. **5**

$F(A, B, C, D) = \sum m(0, 1, 2, 3, 11, 12, 14, 15)$

(b) Convert the given boolean function into cannonical SOP form **5**

$F(A, B, C, D) = \overline{A}BC + A\overline{D} + ACD$

4. (a) Draw logic diagram of 4 bit adder/ subtractor and explain its working. 5

(b) What is the race - around condition in JK flip flop ? How it can be overcome ? 5

5. Design a 3 - bit Synchronous up down counter using J - K flip - flops. 10

6. (a) Explain working of MOSFET as switch. 5

(b) Draw circuit diagram of CMOS - NOR gate and explain its working. 5

7. (a) Explain various specifications of digital ICs. 4

(b) What is wired AND connection of digital ICs ? What are its advantages ? Draw a circuit of TTL NAND gate with wired AND connection. 6

8. (a) Draw a ROM array and explain its working principle. 5

(b) Explain Concept of PAL. 5

9. Design a BCD to seven segment decoder using

(a) PROM (b) PLA **5x2=10**

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

(a) ASCII code

(b) Digital Comparator

(c) Pseudo Random Binary Sequencing (PRBS) generator.