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BIEL-003

B.Tech. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00324

Term-End Examination

June, 2014

BIEL-003 : DIGITAL ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks.*

1. (a) What do you mean by a Unit distance code ? Write any such 4-bit code. *3*

(b) Given that $16_{10} = 100_b$, find the value of b. *3*

(c) State and prove DeMorgan's theorem. *4*

2. Design a circuit that will output a HIGH (1) whenever the 4-bit hexadecimal input is an odd number. Implement the circuit by using NAND gates only. *10*

3. (a) Design a Half-subtractor circuit. *5*

(b) What is the disadvantage of serial adders ? For which applications are they preferred ? *5*

4. How does a JK flip-flop differ from an S-R flip-flop in its basic operation ? With neat diagram explain the working of a Master-Slave JK flip-flop. *10*

5. Implement a 4-bit synchronous up-down counter using JK flip-flops. Explain its working. *10*

6. What is PROM ? Describe various methods which can be used to erase a PROM. Can a PROM be used to implement a truth table ? Justify your answer. *10*

7. Compare the following technologies : *10*
   (a) TTL and MOS
   (b) MOS and CMOS

8. With the help of neat circuit diagrams, explain the working of a two-input standard ECL circuit. *10*

9. (a) How does a static RAM cell differ from a dynamic RAM cell ? Give the circuit diagram for a cell in each. *5*
   (b) What do you mean by Pulse train generator ? State its use. *5*

10. Write short notes on any ***two*** of the following : *2×5=10*
   (a) ALU
   (b) Priority encoder
   (c) PLA