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BIEL-003

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

December, 2015

BIEL-003 : DIGITAL ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Assume any missing data suitably.*

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

(b) Differentiate between ROM, PLA and PAL. *5*

2. (a) Write and explain excitation table for D flip-flop. *5*

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

3. (a) Explain the concept of PAL. *5*

(b) Design and explain 4-bit comparator. *5*

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

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

(b) Explain the Master-Slave JK flip-flop. *5*

5. (a) What is the difference between Encoders and Decoders ? *5*

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

6. (a) What is the difference between Static RAM and Dynamic RAM ? *5*

(b) Explain the working of MOSFET as switch. *5*

7. (a) Simplify the logic function using Quine-McCluskey method : *5*

$f(A, B, C, D) = \pi M (2, 7, 8, 9, 10, 11, 12)$.

(b) Design a BCD to seven segment decoder using PROM. *5*

8. (a) Explain the various specifications of digital ICs. *5*

(b) Explain a ROM array and explain its working principle. *5*

9. Design a 3-bit up/down counter with a control bit C. Use JK flip-flops. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) ASCII Code

(b) ALU

(c) PROM

(d) MOS as a switch