No. of Printed Pages : 2

BIEL-003

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

00733

Term-End Examination

December, 2016

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. Use of scientific calculator is allowed.*

1. (a) For a given number $(1437)_{10}$, obtain its equivalent excess-3 code and gray code. 5

(b) Simplify the given Boolean expression using Boolean algebra : 5

$$F = \overline{A}\overline{B}CD + \overline{A}BCD + AB\overline{C}D + ABC\overline{D}$$

2. (a) Design and implement a full adder using multiplexer. 5

(b) Design a 3-bit priority encoder. 5

3. (a) Define the following terms : 5

(i) Excitation Table

(ii) State Table

(b) Design a Mod-7 ripple up-counter. 5

4. (a) Simplify $F = \Sigma m (1, 3, 7, 10, 13) + d (0, 2, 4)$ using K-map. *5*

(b) Design and implement D flip-flop using JK flip-flop. *5*

5. (a) Draw and explain the working of a TTL NAND gate. *5*

(b) Explain, how MOSFET acts as a switch. *5*

6. (a) Differentiate between static and dynamic RAM. *5*

(b) Draw and explain the working of a static RAM cell. *5*

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

(b) Implement $y = 5x + 3$ using multiplexer, where x is a 3-bit number. *5*

8. Simplify $F = \Sigma (0, 3, 5, 7, 13, 14, 15)$ using K-map and implement the simplified expression using Universal gates. *10*

9. (a) Design a 4-bit binary-to-gray code converter using PROM. *5*

(b) Write notes on the following : *5*

(i) FLASH Memory

(ii) EPROM

10. Design a Mod-8 synchronous up/down counter using JK flip-flop. *10*
