

**B.Tech. – VIEP – ELECTRICAL ENGINEERING  
(BTELVI)**

**Term-End Examination**

**June, 2016**

00016

**BIEE-017 : DIGITAL ELECTRONICS**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any five questions. All questions carry equal marks. Missing data may be suitably assumed. Use of scientific calculator is permitted.*

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1. For the Boolean function

$$F = x\bar{y}z + \bar{x}\bar{y}z + \bar{w}xy + w\bar{x}y + wxy,$$

- (a) Obtain the truth table for F.
- (b) Draw the logic diagram for F.
- (c) Simplify F to minimum number of literals using Boolean algebra.
- (d) Obtain simplified expression.
- (e) Draw the logic diagram of simplified expression and make conclusions.

$$3+3+3+2+3=14$$

2. Simplify the Boolean function F, together with the don't-care condition 'd' and then express the function in POS form.

$$F(A, B, C, D) = \Sigma(5, 6, 7, 12, 14, 15)$$

$$d(A, B, C, D) = \Sigma(3, 9, 11, 15)$$

Draw the logic circuit. 14

3. Give the block diagram of a BCD adder. Explain its operation with the help of a truth table and hence draw its simplified circuit diagram. 14
4. What is a decoder? Draw the circuit diagram of a 3-to-8 line decoder and explain its operation. Also give its truth table and uses. 14
5. Define Multiplexer. Give the logic diagram and block diagram of a simple 2-to-1 line multiplexer. Implement a full adder with two  $4 \times 1$  multiplexers. 14
6. Compare and contrast the architecture of INTEL 8085 and 8086 microprocessors. 14
7. Discuss the various addressing modes of 8086 and explain their significance also. 14

8. Write short notes on any *two* of the following :

$2 \times 7 = 14$

- (a) Shift Registers
  - (b) Addressing Modes of 8085
  - (c) Programmable Logic Array
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