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

Term-End Examination

00246   **June, 2015**

BIEE-017 : DIGITAL ELECTRONICS

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Assume missing data, if any.*

1. Simplify the following Boolean function in the form of :   *5+5=10*

    (a)   Sum of products, and

    (b)   Product of sums.

    $F(A, B, C, D) = \Sigma(0, 1, 2, 5, 8, 9, 10)$

2. Design a BCD-to-Excess-3-code converter using minimum number of NAND gates.   *10*

3. Design a combinational circuit using ROM. The circuit accepts a 3-bit binary number and generates its equivalent excess-3 code.   *10*

4. A combinational circuit is defined by the following functions :

$$F_1(A, B, C) = \Sigma(3, 5, 6, 7)$$

$$F_2(A, B, C) = \Sigma(0, 2, 4, 7)$$

Implement the circuit with a PLA having three inputs, four product terms, and two outputs. *10*

5. Design a counter with the following binary sequence :

0, 4, 2, 1, 6 and repeat.

Use JK flip-flops. *10*

6. Obtain the following realizations : *5+5=10*

(a) T flip-flop from D flip-flop

(b) D flip-flop from SR flip-flop

7. Design a sequence detector circuit to detect a serial input sequence of 1010. It should produce an output 1 when the input pattern has been detected. *10*

8. Explain the architecture of Intel 8085 with the help of a neat block diagram. *10*

9. What do you mean by addressing modes ? What are the different addressing modes supported by 8086 ?   *5+5=10*

10. Write an assembly language program to find out the number of positive numbers and negative numbers from a given series of signed numbers.   *10*