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

## Term-End Examination

## December, 2015

### BIEE-017 : DIGITAL ELECTRONICS

*Time : 3 hours*                                    *Maximum Marks : 70*

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

1.  Draw a circuit that uses only one AND gate and one OR gate to realize each of the following functions : *10*

    (a)   ABCF + ACEF + ACDF

    (b)   (V + W + Y + Z) (U + W + Y + Z) (W + X + Y + Z)

2.  Show how a full-adder can be converted to a full-subtractor with the addition of one inverter circuit. *10*

**3.** Implement the following expression using a multiplexer : *10*

$F(A, B, C, D) = \Sigma\ m(0, 2, 3, 6, 8, 9, 12, 14)$

**4.** Implement the following functions using 3 : 8 decoder : *10*

(a)  $F_1(a, b, c) = \Sigma\ m(0, 1, 3, 5, 6)$

(b)  $F_2(a, b, c) = \Sigma\ m(0, 2, 4, 7)$

**5.** Describe the operation of an SR flip-flop. *10*

**6.** Discuss the working of serial in parallel out shift register with logic diagram and waveforms. *10*

**7.** Design a sequential circuit with JK flip-flops to satisfy the following state equations : *10*

$A(t + 1) = A'B'CD + A'B'C + ACD + AC'D'$

$B(t + 1) = A'C + CD' + A'BC'$

$C(t + 1) = B$

$D(t + 1) = D'$

**8.** Explain the instruction set of Intel 8085 microprocessor. *10*

**9.** Explain the following assembler directives : *10*

    (a)   ASSUME

    (b)   DW

    (c)   DD

    (d)   DB

    (e)   EQU

**10.** Write a program to find out whether a given byte is in the string or not. If it is in the string, find out the relative address of the byte from the starting location of the string. *10*