TEC-302 **1171** Printed Pages : 4

Paper ID & Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | | |

B.Tech. II Year III Sem.
Odd Examination, 2015
DIGITAL ELECTRONICS AND DESIGN ASPECT

Time: 3.00 Hours] *[Max. Marks: 100*

Answer Any Four **(4x5=20)**

1.1 Convert the numbers into desired base

(a) $(A6BF5)_{16}=(\ )_2$

(b) $(101.01)_2=(\ )_{10}$

(c) $(7.FD6)_{16}=(\ )_8$

1.2 Subtract $(1010)_2$ from $(1111)_2$ using 2's complements. Subtract by direct method also and compare.

1.3 Add the following BCD numbers (a)1001 and 0100 and (b)00011001 and 00010100

1.4 Encode data bits 0101 into a 7-bit even parity hamming code.

1.5 Simplify the Boolean function

$F(A,B,C,D)=\sum_m(1,3,7,11,15)+\sum_d(0,2,5)$

Answer Any Four **(4x5=20)**

2.1 An 8-to-1 MUX has inputs A, B,C connected to the selectioninputs S2, S1 and S0 respectively. The data inputs D0 through D7, are as follows D1=D2=D7=0, D3=D5=1, D0=D4=D, D6=$\overline{D}$. Determine the Boolean expression that the MUX implements.

2.2 Show how ta 16-input MUX is used to generate the function, $Y = \overline{ABC}D + BCD + A\overline{BC} + AB\overline{C}D$

2.3 What is race around condition? How is it avoided in master slave flip flop?

2.4 Explain Differences between PLA and PAL in detail.

2.5 Show the logic requires to convert a 10-bit gray code to binary and use the logic to convert the following gray code to binary (a)1010000000 (b) 0011001100

Answer Any Two **(2x10=20)**

3.1 Design a MOD -6 Counter using K-map.

3.2 What is a ripple counter? Why is it named so?

3.3 An 8-Mhz square wave clocks a 5-bit ripple counter. What is the frequency of the last flip flop? What is the duty cycle of this output waveform?

Answer Any Two **(2x10=20)**

4.1 Explain the parameters used to characterise logic families.

4.2 Give two advantages and one disadvantage of totem pole output arrangement.

4.3 Draw the circuit diagram of negative logic AND gate with 3 inputs.

Answer Any Two **(2x10=20)**

5.1 Explain static -1 and static -0 Hazard with one example

5.2 Explain one method for elimination of static hazard.

5.3 Differentiate between RAM and ROM. How many 16K x 1 RAMs are required to achieve a memory with word capacity of 16K and a word length of 8 bits?

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