VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)

Term End Examination - May 2013

Course : ITE205 - Digital Electronics and Microprocessors Slot: G2+TG2

Class NBR : 3982

Time : Three Hours Max.Marks:100

Answer ALL Questions

1. a) Using 10's complement perform following subtraction **[4]**
   72532 - 3250
   b) Solution to the quadratic equation X^2-10X+31 = 0 is X=5 , X=8. What is the base of the numbers **[4]**
   c) Perform the following conversion **[2]**
   11001.11102 = (?)10

2. a) Find the complement of F = x+yz and then show that FF'= 0 and F+F'= 1. **[5]**
   b) Design gray to binary decoder and convert the following gray codes into binary codes **[5]**
   (i)10101
   (ii)110101

3.(a) i) What is Full adder and how it is different from half adder? Implement Full-adder using half adders. **[5]**
   ii) Implement the Boolean function F(x,y,z) = ∑(1,2,6,7) using 4 x 1 mux. **[5]**

OR

3.(b) a) Explain the working of carry look ahead adder with a neat sketch **[5]**
   b) Implement the following functions using decoder **[5]**
   (i) f(A,B,C) = A+BC
   (ii) f(A,B,C)= B + C

4. Design 4-bit binary synchronous counter using 'D' Flip-flops. **[10]**

5.(a) What is race around problem and explain the three possible solutions to eliminate it? **[10]**

OR

5.(b) A digital system has a clock generator that produces pulses at a frequency of 80MHz.Design a circuit that provides a clock with a cycle time of 50ns using **[10]**

(i)'D' flip-flop

(ii) J K Flip-flop

6. Explain the operation of dual slope ADC. Write the advantages and disadvantages of dual slope ADC compared to successive approximation. **[10]**

7. What is meant by addressing mode? Explain all the addressing modes of 8086 microprocessor with suitable examples. **[10]**

8. Briefly explain the maximum mode of 8086 mocroprocessor and draw the memory read and write timing diagram in maximum mode. **[10]**

9. Draw the block diagram of DMA controller and explain the operation of it. **[10]**

10. a) Design XOR gate using 2X1 MUX **[2]**

b) Design 2-bit synchronous binary down counter with J K Flip-flops. **[2]**

c) Draw the block diagram of ladder type DAC **[2]**

d) What are the different flags in 8086? **[2]**

e) Explain shortly about USART. **[2]**

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