

## **Term End Examination - November 2014**

Course : ITE205 - Digital Electronics and Microprocessors Slot : B2+TB2

Class NBR : 5576

Time : Three Hours Max.Marks:100

PART – A (8 X 5 = 40 Marks) Answer ALL Questions

1. Represent the BCD Numbers in 2-4-2-1 and Excess 3 Format.

2. Simplify the Boolean Expression F = AB + (AC)' + AB'C(AB + C).

3. There are Four Inputs  $D_0$ ,  $D_1$ ,  $D_2$  and  $D_3$  and  $P_e$  the Output is found to be high when the Number of Zeros in the Input is in Odd Numbers. Design the circuit.

4. Design the Sequential Circuit from the given Excitation Table.

FF date	a inputs	Output	D FF inputs
J	K	Q	D
0	О	О	0
0	1	О	0
1	О	О	1
1	1	О	1
0	1	1	0
1	1	1	0
0	О	1	1
1	О	1	1

- 5. Explain with neat diagrams the construction of ROM.
- 6. An eight-bit D/A converter has a step size of 20 mV. Determine the full-scale output and percentage resolution.
- 7. Write a 8086 Program to Find the Square and Cube of a Given Number.
- 8. What are the features of 8254 Timer?

## PART - B (6 X 10 = 60 Marks)

## **Answer any SIX Questions**

9. Design a Combinational Circuit which has 4 Inputs and One Output. The Output will be high only if the Majority of the Inputs are high.

10. Solve the Following.

a) Simplify the Boolean function 
$$F = ((XY' + XYZ)' + X(Y + XY'))'$$
. [4]

- b) Simplify the Boolean function F = XYZ + XY'Z + XYZ'. [3]
- c) Obtain the canonical sum of product form of the following function. [3] F(A, B) = A + B
- 11. Minimize the Expression for Max terms using K-Map.

$$Y = (A + B + \overline{C})(A + \overline{B} + \overline{C})(\overline{A} + \overline{B} + \overline{C})(\overline{A} + B + C)(A + B + C)$$

12. A Clocked M-N Flip Flop is specified by the characteristic Table shown below. Obtain this Flip flop from the J-K Flip Flop. Draw the Logic Diagram showing the details of Combinational Circuits for the Conversion.

м	N	Q <sub>n</sub>	Q <sub>n+1</sub>
0	0	0	1
0	0	1	1
0	1.	0	0
0	1	1	1
- 1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

- 13. Explain the working of Flash Memory with neat diagrams.
- 14. Design a D/A converter for 4-bit digital inputs in 1's complement format.
- 15. Draw the Interrupt Vector Table showing the Vector Address used in 8086 microprocessor.
- 16. Draw the Block Diagram of 8251 USART and also show the operation between CPU and 8251.

