B.E.(with Credits)-Regular-Semester 2012 - Mechanical Engineering Sem VI

ME602 - Industrial Electronics

P. Pages : 2 **GUG/W/16/5395**

Time : Three Hours * 3 5 6 3 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Diagrams and Chemical equation should be given wherever necessary.

1. a) Prove the following using Boolean algebraic theorems. **8**

1) $AB + \overline{A}B + \overline{A}\,\overline{B} = \overline{A} + B$

2) $\overline{A}BC + A\overline{B}C + AB\overline{C} + ABC = AB + BC + CA$

b) Solve the following. **8**

1) $1762.46_8 = ?_{16}$

2) $AB6_{16} = ?_{10}$

3) Convert 49056_{10} to binary.

4) Perform the subtraction using 2's complement method 01100 - 00011.

OR

2. a) Minimize the following function using K - map and realize it. **8**

a) f (w, x, y, z) = πm (0, 6, 9, 10, 13). d (1, 3, 8).

b) f (A, B, C, D) = Σm (0, 13, 14, 15) + d (1, 2, 3, 9, 10, 11).

b) Design full adder using two half adders. **8**

3. a) Explain the block diagram of 8051 Microcontroller. **8**

b) Explain the instruction set of 8051 with examples. **8**

OR

4. a) With a neat diagram explain how an 8051uc can access a 4KB external RAM. **8**

b) Explain the addressing modes of 8051 with examples. **8**

5. a) What are registers used for social communication in 8051. **8**

b) Explain the control word format for I/O mode of 8255. **8**

OR

6. a) Explain TCON and TMOD function registers of 8051 Microcontroller in detail. **8**

b) Explain interrupt priority of 8051 Microcontroller in detail. **8**

7. a) Write short note on different types of register in PLC. **8**

b) Compare PLC and 8051 Microcontroller. **8**

OR

8. a) What is ladder diagram? Explain with suitable example. **8**

b) Write a short note on timer and counter functions with reference of PLC. **8**

9. a) What is feedback control system? Explain feedback control for human body temperature. **8**

b) What are the different elements of a closed loop system. Explain in detail. **8**

OR

10. a) Discuss in detail the mechatronic application of automatic washing machine. **8**

b) Explain the function of a programmable logic controller. **8**

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