

Code: CSCS1T3

I M.Tech-I Semester-Regular Examinations-April 2013

**COMPUTER ORGANIZATION & ARCHITECTURE
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1.a) Simplify the Boolean function F in Products of Sum form
$$F(A,B,C,D) = \sum(0,1,2,4,5,7,11,15)$$
 7 M

b) Perform the arithmetic operations
(+70) + (+80) and (-70) - (-80) in binary using signed-2's complement representation. Use eight bits to accommodate each number together with its sign. Show that the overflow occurs in both cases, that the last two carries are unequal, and that there is a sign reversal. 7 M

2. a) Design 4X1 multiplexer and draw the logic diagram.
Construct 8X1 multiplexer with 4X1 multiplexers and logic gates. 7 M

b) Design a mod-10 counter. 7 M

3. a) Explain memory hierarchy in a computer system. 4 M
- b) What is cache memory ? Explain various mapping methods. 10 M
4. a) Explain asynchronous data transfer methods. 7 M
- b) Explain DMA transfer with a block diagram 7 M
5. a) Explain Addition and Subtraction with signed 2's complementation data. 7 M
- b) Explain Division algorithm with an example. 7 M
6. a) Explain various addressing modes of 8086. 7 M
- b) Explain 8086 instruction formats. 7 M
7. a) Explain RISC pipelining. 7 M
- b) Distinguish between RISC and CISC. 7 M
8. a) Explain Multi-threading. 7 M
- b) Explain non-uniform memory access computers. 7 M