Code No: I5802/R16

M. Tech. I Semester Regular Examinations, December-2016

COMPUTER ORGANIZATION AND ARCHITECTURE

Computer Science & Engineering (58)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1. a What is fixed point representation of integers? Explain different ways to represent signed integers. 7M
   b Using 8-bit 2's complement integers, perform the following computations 5M
      i. 26-(-4)
      ii. 1-7.

2. Simplify the following Boolean function in sum of products form by means of a four variable map. Draw the logic diagram with 12M
   a) AND-OR gates
   b) NAND gates
   F(A,B,C,D)=∑(0,2,8,9,10,11,14,15)

3. a What is shift register? Explain the general capabilities of shift registers. 6M
   b What is a Flip-Flop? Explain the operation of RS and JK Flip-Flops. 6M

4. a A digital bus has a common bus system for 4 registers of 4 bits each. The bus is constructed with multiplexers 7M
      i. How many selection inputs are there in each multiplexer?
      ii. What size of multiplexers is needed?
      iii. How many multiplexers are there in the bus?
   b Design a 4-bit synchronous binary counter. 5M

5. a Write a short note on ALU design. 4M
   b Discuss Arithmetic addition and subtraction with signed-2's complement representation. 8M

6. a Explain Main Memory and its types. 5M
   b What is cache memory? Explain different types of mapping from main memory to cache memory. 7M

7. a Briefly explain about Division Algorithm with an example. 7M
   b What are handshaking signals? Explain the handshake control of data transfer during input and output operation. 5M

8. a Discuss Direct Memory Access (DMA). 7M
   b How can you justify Daisy Chain priority is useful in priority interrupt? 5M

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