Printed Pages : 2

EEC-402

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0322

Roll No.

B.Tech.

(SEMESTER-IV) THEORY EXAMINATION, 2011-12

COMPUTER ARCHITECTURE & ORGANIZATION

Time : 3 Hours]

[Total Marks : 100

Note : Attempt questions from **all** Sections as directed.

Section – I

1. Answer **all** the questions. Each question carries equal marks. $10 \times 2 = 20$

   (a) What are the differences between structure and behaviour in the digital system ?

   (b) List the types of transfers supported by interconnection structure.

   (c) Define the terms big-endian and little-endian.

   (d) How directives differ from other assembly language instructions ?

   (e) A floating point pipeline has five stages s_1, s_2, s_3, s_4 and s_5 whose delays are 120, 90, 100, 85 and 100 respectively. What is the pipeline maximum throughout in MELOPS ?

   (f) Give the IEEE 754 standard 32-bit floating pointing number format.

   (g) "Hardwired control unit is faster than micro programmed control unit." Justify this statement.

   (h) What are the characteristics of vertical micro instructions ?

   (i) What is external fragmentation ? How it is different from internal fragmentation ?

   (j) Let t_1 and t_2 be the access times of M_1 and M_2 respectively, relative to CPU. What is the average time (t_A) for the CPU to access a word into two-level memory ?

Section – II

2. Answer any **three** questions of the following. Each question carries equal marks. $3 \times 10 = 30$

   (a) Explain about the different performance measures used to represent a computer system's performance.

(b) What is addressing mode ? Explain the various types of addressing modes with examples.

(c) Explain the arithmetic overflow and divide overflow with some examples for 2's complement numbers.

(d) Describe how micro instructions are arranged in control memory and how they are interrupted.

(e) What are the different types of mapping techniques used in the usage of cache memory ? Explain.

Section – III

Answer **all** questions. Each question carries equal marks. **5 × 10 = 50**

3. Design a circuit transferring data from a 4-bit register which uses D Flip-Flops to another register which employs RS Flip-Flops.

OR

Design a multiplexer to implement a full adder and give explanation.

4. List and describe floating point arithmetic instructions of Motorola 680X0 instruction set.

OR

What are advantages and disadvantages of RISC and CISC ?

5. Draw a flow chart to explain how addition and subtraction of two fixed point numbers can be done. Also draw a circuit using full adders for the same.

OR

Multiply 10111 with 10011 using Booth Algorithm with its theoretical basis.

6. Explain about micro instruction sequencing techniques specially variable format address micro instructions.

OR

Write short notes on :

(a) Arithmetic pipeline

(b) Timing diagram of instruction pipeline

7. Compare and context Asynchronous DRAM and Synchronous DRAM.

OR

Explain system bus architecture for multi processors with a neat sketch.
