C 58195 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION JUNE 2009

CS 04 : 405—COMPUTER ORGANISATION AND DESIGN

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Amdahl's Law.

(b) Define MIPS fields.

(c) Let's try adding 6_{10} to 7_{10} in binary and then subtracting 6_{10} to 7_{10} in binary.

(d) Determine the gi, P_i, Pi and Gi values of these two 16 bit numbers.

a : 0001 1010 0011 0011_2

b : 1110 0101 1110 1011_2

also, what is carry out (15) (C4) ?

(e) Define clocking methodology.

(f) What are the operation of the data path ?

(g) Draw the basic structure of a memory hierarchy.

(h) Define Elaboration.

(8 × 5 = 40 marks)

II. (a) Write short notes on :

(i) Measuring performance. (5 marks)

(ii) Relating the metrics. (5 marks)

(iii) Fallacies and pit falls. (5 marks)

Or

(b) Explain about constructing on Arithmetic logic unit. (15 marks)

III. (a) Explain about operands of the computer hardware. (15 marks)

Or

(b) (i) Explain about first version of the multiplication algorithm and hardware. (10 marks)

(ii) Apply first version multiplication algorithm for following example 4-bit numbers to save space, multiply $2_{10} \times 3_{10}$ or $0010_2 \times 0011_2$.

(5 marks)

Turn over

IV. (a) Write short notes on a multicycle implementation. (15 mars)

Or

(b) Write short notes on exceptions and apply the given example. Given this instruction sequence

40_{16}	sub	$11,	$2,	$4
44hex	and	$12,	$2,	$5
48hex	Or	$13,	$2,	$6
4Chex	add	$1,	$2,	$1
50hex	Slt	$15,	$6,	$7
54hex	lw	$16,	50,	($7)

assume the instructions to be invoked on an expection begin like this.

40000040hex	SW	$25,	1000	($0)
40000044hex	SW	$26,	1004	($0)

show what happens in the pipeline if an overflow exception occurs in the add instruction. (15 marks)

V. (a) Write short notes on :

(i) Inter-leaved memories. (8 marks)

(ii) Virtual memory. (7 marks)

Or

(b) Explain about a common frame work for memory hierarchies. (15 mars)

[4 × 15 = 60 marks]