C 31834 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION JUNE 2007

CS 04 405—COMPUTER ORGANISATION AND DESIGN

[2004 admissions]

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) What are addressing modes ? Explain any *five* addressing modes and show how operands are identified in each addressing mode using a neat diagram.

(b) Explain the use of synthetic benchmarks.

(c) Draw the flowchart for floating point multiplication and explain.

(d) Convert : $(254)_{10} = (\ -\ )_2 = (\ -\ )_{16}$.

(e) Explain how exceptions are handled.

(f) Write the steps needed for executing a R-type instruction.

(g) State the principle of locality. Explain its importance in memory organization.

(h) What are the steps that are performed in executing the write system call ?

(8 × 5 = 40 marks)

II. (a) Explain the working of a CRT based display device.

Or

(b) Write a procedure to calculate the factorial of a number. Show how stacks are used in parameter passing.

(15 marks)

III. (a) Explain the working of a carry look ahead adder.

Or

(b) Design a 4-bit ALU that performs AND, OR and addition on a and b or $\bar{a}$ and b.

(15 marks)

IV. (a) What are the drawbacks of single cycle implementation ? Explain the implementation of multiple clock cycle in detail.

Or

(b) Draw the complete finite state machine control for the data path and explain.

(15 marks)

V. (a) Explain the different methods used for transferring data between a device and memory.

(15 marks)

Or

Turn over

(b) (i) When a DMA transfer is done between a disk and the main memory in a computer system that has a main memory cache, there are two ways to proceed : The transfer can go through the cache or it can bypass the cache. Discuss the advantages and disadvantages of each choice.

(10 marks)

(ii) Explain the working of a mouse.

(5 marks)

[4 × 15 = 60 marks]