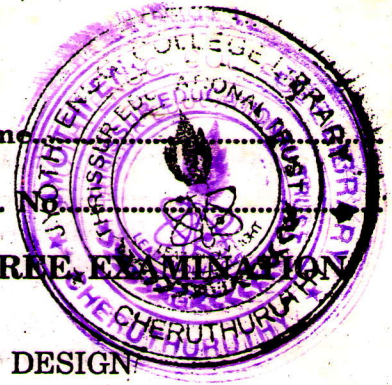


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Name

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.

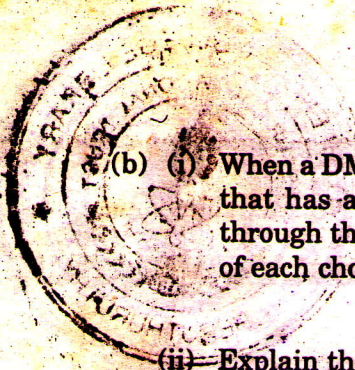
(15 marks)

- 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 x 15 = 60 marks]