



RO-7083/7084

B. E. III (Sem. VI) (EC) Examination

May - 2007

Computer Architecture & Organization

Time : 3 Hours]

[Total Marks : 100

RO - 7083

Instructions :

(1)

नीचे दृशवित निशानीवाणी विगतो उत्तरवही पर अवश्य लभवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. E. 3 (Sem. 6) (EC)

Name of the Subject :
Computer Architecture & Organization

Subject Code No. : 7 0 8 3 Section No. (1, 2,.....) : 1

Seat No. :

Student's Signature

2. Use Separate answer sheet for each section.
3. Make assumption whenever required.
4. Numbers on the right indicate marks.

1 Answer Following Questions. (Any Six)

18

- 1 Define Computer Architecture and Computer Organization.
- 2 Explain the difference between hardwired control and micro programmed control memory. Is it possible to have a hardwired control associated with a control memory?
- 3 What is Interrupt? Explain Types of Interrupt.
- 4 Why should the sign of the remainder after a division be the same as the sign of the dividend?
- 5 Convert following infix notation to reverse polish notation.
 - i) $(A - B + C * (D * E - F)) / (G + H * K)$
 - ii) $(A + B) * (C * (D + E) + F)$
- 6 An Output Program resides in memory starting from 2300. It is executed after the computer recognizes an interrupt when FGO becomes a 1 (While IEN=1)
 - a. What instruction must be placed at address 1?
 - b. What must be the last two instructions of the output program?
- 7 List different schemes that can be used in an instruction pipeline in order to minimize the performance degradation caused by instruction branching. Explain any two of them.

- 2 A What do you mean by priority interrupt? Discuss h/w priority interrupt system.
B Derive an algorithm in flowchart form for the non-restoring method of fixed point binary division.

OR

- 2 A Explain Booth's Multiplication Algorithm.
B Explain symbolic microinstruction and write symbolic micro program for FETCH and DECODE label.
- 3 A Describe the register based CPU organization with diagram which allows manipulating any two or single register using register related instructions.
B Answer the following (Any two)
- (i) Derive ratio for speedup of a pipeline processing over an equivalent non-pipeline processing.
 - (ii) Flynn's Classification.
 - (iii) What is the difference between isolated I/O and memory mapped I/O? What are advantages and disadvantages of each?

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Name of the Examination :

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Seat No. :

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4 Attempt the following.

- | | | |
|----------|---|----------|
| A | Explain with block diagram DMA transfer in computer system. | 6 |
| B | Explain Division operation for signed magnitude data. | 8 |
| C | Explain types of Interrupts. | 4 |

- | | | |
|------------|---|----------|
| 5 A | Explain | 8 |
| | i) Single Register Organization | |
| | ii) General Register Organization | |
| | iii) Stack Organization | |
| B | What is cache coherence? Explain solution for it. | 8 |

OR

- | | | |
|------------|---|-----------|
| 5 A | Explain addition and subtraction for signed magnitude data with flowchart. | 10 |
| B | Describe in word and by means of block diagram how multiple matched words can be read out from an associative memory. | 6 |

6 Attempt any four: 16

- 1 Explain characteristics of Reduced Instruction Set Computer.
- 2 What is divide overflow in division of two fixed point binary numbers?
- 3 Indicate weather the following constitute a control, status or data transfer command
 1. Skip next instruction if flag is set.
 2. Seek a given record on the magnetic disk.
 3. Check if I/O device is ready.

Move printer paper to beginning of the next page.

- 4 Show that there can be no mantissa overflow after a multiplication.
- 5 Explain Bit Oriented Protocol in detail