DM-7083-84

B. E. III (EC) (Sem. VI) Examination
January – 2008
Computer Architecture & Organization

Time : 3 Hours]   [Total Marks : 100

DM-7083

Instructions :

(1)

(2) Use separate answer sheet for separate section.

(3) Make assumption whenever required.

(4) Numbers on the right indicate marks.

1   Answer Following Questions. (Any Six)   18

     1   Explain the following instruction with register transfer statements.
         a) BSA (Branch & Save Address)
         b) Interrupt

     2   Convert following infix notation to reverse polish notation.
         i) $(A - B + C * (D * E - F)) / (G + H * K)$
         ii) $(A + B) * (C * (D + E) + F)$

     3   Define Computer Architecture and Computer Organization.

     4   Discuss memory hierarchy in a computer system. Explain cache memory in brief.

     5   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.

     6   Why does DMA have high priority over the CPU when both request memory transfer?

     7   Explain memory interleaving.

2 **(A)** Describe the register based CPU organization with diagram which allows manipulating any two or single register using register related instructions.   8

B Explain Division Algorithm with flow chart for binary numbers. **8**

OR

2 A Explain Booth's Multiplication Algorithm. **8**

B Explain symbolic microinstruction and write symbolic micro program for ADD and EXCHANGE label. **8**

3 A Explain micro programmed control organization. **8**

B Answer the following (Any two) **8**

(i) Explain interrupt initiated I/O.

(ii) Formulate a six segment instruction pipeline for a computer. Specify the operation to be performed in each segment.

(iii) Explain various CPU organizations.

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4	**Attempt the following.**	
A	What do you mean by priority interrupt? Discuss h/w priority interrupt system.	6
CH-10 B	Explain Addition and Subtraction of signed 2's complement data with flow chart and hard ware implementation.	8
C	Explain Flynn's classification.	4
5 (A)	Explain with an example	12
	i) Zero Address Instruction	
	ii) One Address Instruction	
	iii) Two Address Instruction	
	iv) Three Address Instruction	
B	Explain Difference between RISC vs. CISC.	4

OR

CH-10 5 A	Explain division of two fixed point binary numbers in signed magnitude format. Also draw the flow chart.	10
B	Explain HandShaking for asynchronous data transfer.	6
6	**Attempt any four:**	16
1	Explain Daisy chaining priority.	
2	Derive ratio for speedup of a pipeline processing over an equivalent non-pipeline processing.	
3	Explain SIMD array processors.	
4	Explain Microinstruction format.	
5	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.	