Total No. of Questions—**6**] [Total No. of Printed Pages—**4**

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S.E. (Comp. Engg.) (Common to I.T.) (Second Semester) EXAMINATION, 2009

COMPUTER ORGANIZATION

(2003 COURSE)

Time : Three Hours **Maximum Marks : 100**

N.B. :— (*i*) Answer any *three* questions from Section **I** and any *three* questions from Section **II**.

(*ii*) Answer to the two Sections should be written in separate answer-books.

(*iii*) Neat diagrams must be drawn wherever necessary.

(*iv*) Figures to the right indicate full marks.

(*v*) Assume suitable data, if necessary.

SECTION I

1. (*a*) Explain Booth's algorithm to multiply the following pair of numbers :

A = 15 (multiplicand)

B = –7 (multiplier) [8]

(*b*) Represent (335.2350) in single and double precision floating point format. [8]

Or

(*a*) Draw the flow chart for restoring division algorithm and solve the following using above algorithm :

Dividend = 27

Divisor = 04 [8]

(*b*) Draw and explain Von Neumann architecture. [8]

P.T.O.

2. (*a*) Write the control sequence for the following instruction :

MOV (R3), R1. [8]

(*b*) Compare hardwired control Vs microprogrammed control. [6]

(*c*) Explain briefly Emulation. [2]

Or

(*a*) Write a microprogram of micro instruction for the following instruction :

ADD (R3), R1+. [8]

(*b*) Draw and explain a neat diagram of multibus organization of a CPU. Show all types of registers, data path and ALU. [8]

3. (*a*) Explain the following addressing modes along with suitable example :

(*i*) Index addressing

(*ii*) Autodecrement addressing

(*iii*) Direct addressing

(*iv*) Immediate addressing. [12]

(*b*) Explain instruction pipelining. Also explain hazards in instruction pipelining. [6]

Or

(*a*) Draw and explain Register Architecture of IA 32/Motorola processor in detail. [9]

(*b*) Explain the design of ALU. [9]

SECTION II

4. (*a*) What is Cache memory ? Explain.

A block set-associative cache consists of a total of 64 blocks divided into block sets. The main memory contains 4096 blocks, each consisting of 128 words.

(*i*) How many bits are there in main memory address ?

(*ii*) How many bits are there in each of the TAG, SET and WORD field ? [8]

(*b*) Explain the following :

(*i*) DVD

(*ii*) CDROM. [8]

Or

(*a*) What is MESI protocol ? Explain the meaning of each of the 4 states in MESI protocol. [8]

(*b*) What is Virtual Memory ? Explain with the help of neat diagram the virtual memory address translation. [8]

5. (*a*) Explain PCI bus with a diagram. [6]

(*b*) What is an I/O channel ? Explain with suitable example three types of I/O channels. [10]

Or

(*a*) Discuss with suitable example programmed I/O and interrupt driven I/O. [6]

(*b*) Draw and explain DMA block diagram and explain cycle stealing. [10]

6. (*a*) What is Bus Arbitration ? Explain the following :

(*i*) Daisy chaining

(*ii*) Polling method of arbitration. [8]

(*b*) Compare RISC and CISC. [6]

(*c*) Explain RISC Architecture. [4]

Or

(*a*) Compare closely coupled systems *Vs* loosely coupled systems. [6]

(*b*) Explain with neat diagram interprocessor communication between 8086 and 8087. [8]

(*c*) Write a short note on Superscalar Architecture. [4]