Total No. of Questions : 5 ] [ Total No. of Printed Pages : 3

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# 403(O)

## B. E. (Fourth Semester) EXAMINATION, Dec., 2009

**(Old Scheme)**

**(Common for CS, EC & IT Engg.)**

COMPUTER SYSTEM AND ORGANIZATION

*Time : Three Hours*

*Maximum Mark : 100*

*Minimum Pass Marks : 35*

**Note :** Attempt all questions. There is internal choice in every question.

1. (a) Explain all the phases of Instruction cycle with interrupt using state diagram. 12

   (b) Describe the General Instruction Format with example. 8

*Or*

   (a) Explain the CPU register organization. 10

   (b) Explain the addressing modes of a processor. 10

2. (a) Explain the difference between hardwired control and microprogrammed control. Is it possible to have a hardwired control associated with a control memory ? 10

   (b) What are the different address sequencing techniques used in microprogramming ? 10

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*Or*

(a) What is the purpose of control memory ? 10

(b) Explain the following terms : 10

(i) Microinstruction encoding

(ii) Microprogram sequencer

3. (a) Given $x = 0101$ and $y = 1010$ in two's complement notation, compute the product $P = x \times y$ with Booth's algorithm. 12

(b) What are the basic elements of floating point addition and subtraction ? 8

*Or*

(a) Explain unsigned binary division algorithm with suitable example. 10

(b) Give reasons for the use of guard bits and explain different methods of rounding the result of a floating point operation. 10

4. (a) Why does DMA have priority over the CPU when both request a memory transfer ? Explain the DMA transfer in a computer system. 12

(b) What are the different I/O addressing schemes of a processor ? Explain them. 8

*Or*

(a) Explain Interrupt driven data transfer scheme and compare it with Programmed data transfer scheme. 12

(b) Write a short note on I/O Processors. 8

5. (a) What is Cache memory ? Explain the types of mapping procedures when considering the organization of Cache memory. 12

(b) Explain the memory hierarchy in a computer system. 8

*Or*

(a) Write a brief note on pipelining and parallel processing by taking a suitable example. 15

(b) What is virtual memory ? 5