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SF-7063

B. E. - III (Sem. VI) (Computer) Examination

May / June - 2011

Computer Organization

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.
Name of the Examination :
☛ B. E. - 3 (SEM. 6) (COMPUTER)
Name of the Subject :
☛ COMPUTER ORGANIZATION
☛ Subject Code No. : 7 0 6 3 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

(2) Draw flowchart or block diagram wherever it is necessary.
(3) Make necessary assumptions if required.

SECTION - I

1 Answer the following : **10**

(1) Enlist types of CPU organization.
(2) What are the basic functional units of a computer ?
(3) Enlist program control instructions.
(4) Define throughput.
(5) What is the use of ORG instruction ?
(6) What is Arithmetic shift operation ? Give example.
(7) What is overflow in signed binary numbers ?
(8) Define hardwired control unit.
(9) Draw the microinstruction format.
(10) Program status word contains various status of ALU. (True / False)

2 State the difference between hardwired and micro programmed control unit. Explain hardwired control unit of basis computer. 8

OR

2 Convert the following numerical arithmetic expression into reverse polish notation and show the stack operations for evaluating the numerical result. 8

$(2+4)[9*(2+6)+12]$

3 Attempt the following : (any **two**) **12**

(1) Explain following instructions : BUN, ISZ

(2) Explain Overlapped register windows with proper diagram.

(3) Convert the following notations from infix to postfix notation.

(a) $a*b+c*d+e*f$

(b) $a*b+a*(b*d+c*e)$

(c) $a+b*[c*d+e*(f+g)]$

4 Attempt the following : (any **four**) **20**

(1) Enlist addressing modes and briefly explain any two with example.

(2) Explain Register stack with push and pop micro operations.

(3) Explain second pass of the assembler.

(4) Explain design of control unit with block diagram.

(5) Draw the flowchart for instruction cycle.

SECTION - II

5 Answer the following : **10**

(1) Give formula of speed up ratio.

(2) Enlist the various types of hazards in pipelining ?

(3) Define memory access time ?

(4) An array processor is a processor that performs computations on large array of data. (True / False)

(5) Secondary memory is called Auxiliary memory. (True / False)

(6) Define supercomputers.

(7) Define associated memory.

(8) Define virtual memory.

(9) Define DMA.

(10) What is handshaking ?

6 Draw flowchart for addition and subtraction of floating point numbers and briefly explain it. 8

OR

6 Draw and explain Booth algorithm for multiplication of signed 2's complement. 8

7 Attempt the following : (any **two**) **12**

(a) The access time of cache memory is 100 ns and main memory is 7000 ns. the hit ratio is 0.9. What is the average access time of the system ? If 80% of memory request are for read, 20% for write, a write-through procedure is used. What is the average access time of the system for both read and write requests ?

(2) Enlist page replacement methods. Explain any one with proper example.

(3) Explain direct mapping and set associative mapping.

8 Write short notes on any four of the following : **20**

(1) Daisy chaining priority

(2) SIMD array processor

(3) Memory interleaving

(4) Compare RISC and CISC architecture.

(5) Memory management hardware.