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Printed Pages—3 ECS—401

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID: 0110 Roll No. 0 9 4 2 2 1 0 4 1 3

B.Tech.

(SEM IV) EVEN SEMESTER THEORY EXAMINATION, 2009-2010

COMPUTER ORGANIZATION

Time : 3 Hours *Total Marks : 100*

Note : *(i) Attempt ALL questions.*

*(ii) All questions carry **equal** marks.*

1. Attempt **any four** parts : **(4x5=20)**

(a) What is sequential circuit ? Explain the block diagram of synchronous sequential circuit.

(b) Discuss the digital computer generation in brief.

(c) Define bus arbitration with suitable diagram.

(d) What do you mean by error detection and correction code ? Explain parity bit concept for above.

(e) Differentiate between fixed point representation and floating point representation. Explain with suitable examples.

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(f) Convert the following decimal numbers to the bases indicated :

(i) 7625 to octal

(ii) 1983 to Hexadecimal

(iii) 174.5 to Binary

(iv) 6279 to octal

(v) 3001 to Hexadecimal

2. Attempt **any four** parts : **(4x5=20)**

(a) What is stack organization ? Compare Register stack and Memory stack.

(b) Explain addressing modes. Define the role of programme counter in addressing mode.

(c) What is CISC ? Explain it with its characteristics.

(d) What is the radix of number if the solution to the quadratic equation :

$x^2 - 10x + 31 = 0$

is $x = 5$ and $x = 8$.

(e) Show the multiplication process using Booth's algorithm when the following numbers are multiplied :

$(-12) * (-18)$

(f) Show the block diagram of the hardware that implements the following register transfer statements.

$y\ T_2 : R_2 \leftarrow R_1,\ R_1 \leftarrow R_2$.

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3. Attempt **any two** parts : **(2x10=20)**

(a) What is Microinstruction ? How is it different from microprogram sequence ? Explain with the help of example.

(b) An encoded microinstruction format is to be used. Show how a 9 - bit microoperation field can be divided into sub-fields to specify 46 different actions.

(c) How a processor execute instructions ? Define the internal functional units of a processor and how they are interconnected ?

4. Attempt **any two** parts : **(2x10=20)**

(a) What are semiconductor RAM memories ? Show the read operation and write operation in static memories with examples.

(b) Explain the concept of Virtual memory. How address mapping is performed in virtual memory ?

(c) What is difference between 2D and $2\frac{1}{2}$ D memory organization ? Explain it with the help of suitable examples.

5. Attempt **any two** parts. (Write the short notes) : **(2x10=20)**

(a) Direct Memory Access (DMA).

(b) Synchronous and Asynchronous communication.

(c) Interrupts with their types and exceptions.

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