1078
B.E. (Electronics and Communication Engineering)
Seventh Semester
Departmental Elective – IV
EC-704: Computer Architecture and Organization

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt* <u>*five*</u> *questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

I.   Attempt the following:-

a) Explain the difference between data manipulation and data transfer instructions with examples.

b) What is a carry look-ahead adder?

c) Explain the difference between hardwired control and micro-programmed control.

d) What is the mapping procedures adopted in the organization of a cache memory?

e) Explain the difference between RISC and CISC architecture.   (5x2)

UNIT – I

II. a) Design a 4 hit combinational circuit decrementer using four full adder circuits.

b) Design a digital circuit that performs the four logic operations of XOR. XNOR, NOR and NAND. Use two selection variables.   (5,5)

III. a) Derive the control gates associated with program counter in the basic computer.

b) Differentiate between BUN, BSA and ISZ with suitable examples.   (5,5)

IV. a) Write a program to multiply two unsigned positive numbers, each with 16 significant bits, to produce an unsigned double-precision product.

b) Compare stack organization with general register organization.   (5,5)

UNIT – II

V.   a) What is control memory? Explain the micro-instruction format and give the symbolic microprogram for any 3 computer instructions.

b) Explain Booth algorithm for multiplication of signed 2's complement numbers.

(5,5)

P.T.O.

VI.   a) Draw and explain flowchart for divide operation of two fixed point binary numbers in signed magnitude representation.

        b) Explain the concept of virtual memory.   (5,5)

VII.   a) Derive the Boolean function for match logic in associative memory. Show the hardware for match logic also.

        b) Explain in detail Direct Memory Access.   (5,5)

x-x-x