

Roll Number: _____

Thapar Institute of Engineering & Technology, Patiala

Department of Computer Science & Engineering

AUXILIARY EXAMINATION (2022)

B. E.(COE) (Third Year): Semester-V

Course Code: UCS510

Course Name: Computer System Architecture and Organization

August 22, 2022

Monday, 5:30 p.m. – 7:30 p.m.

Time: 2 Hours, M. Marks: 50

Faculty: ANJU BALA

- Q.1 Design an arithmetic circuit with one selection variable S and two n-bit data inputs A and B. The circuit generates the following four arithmetic Operations in conjunction with the input carry C_{in} . Draw the logic diagram for two stages. (10)

S	$C_{in}=0$	$C_{in}=1$
0	$A+B'+1$	$A-1$
1	$A+1$	$A+B$

- Q2. Show the content in hexadecimal of registers PC, AC, AR, DR, IR and SC of the basic computer. Given the initial content of PC is FFF, the content of AC is 7EC3. The content of memory at address FFF is 8BCD. The content of memory at address BCD is B420. The content of memory at address 420 is FFFF. Give the answer in table with six columns, Repeat the problem six more times starting with an opcode of another memory reference instructions. (10)

- Q3. Explain various type of addressing modes with example. (10)

- Q4 A computer uses RAM chips of 1024x1 capacity. How many chips are needed and how should their address lines to be connected to implement the memory of 2048 bytes. Construct the memory connections required to implement the 2048 bytes RAM using 1024x1 RAM chip. (10)

- Q5 Differentiate between following

a) RISC vs CISC

b) Cache Memory and Main Memory

(5*2=10)