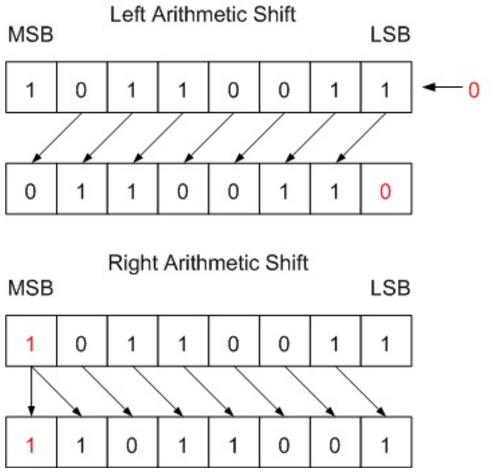
TUTORIAL-4

Q1:- If 8 bits register R=10110011, Perform

(I) R<—-ashr R ,
(II) R<—-ashl R , and
(III) Determine values for ashr R and ashl R
(IV) State whether there is overflow or not in case of ashl R



Overflow in case of ashl R, because MSB are 1 ,0 then taking XOR of 1 0 is V=1

Q2:- If 8 bits register A=01110001 and B=10001001, Perform :-

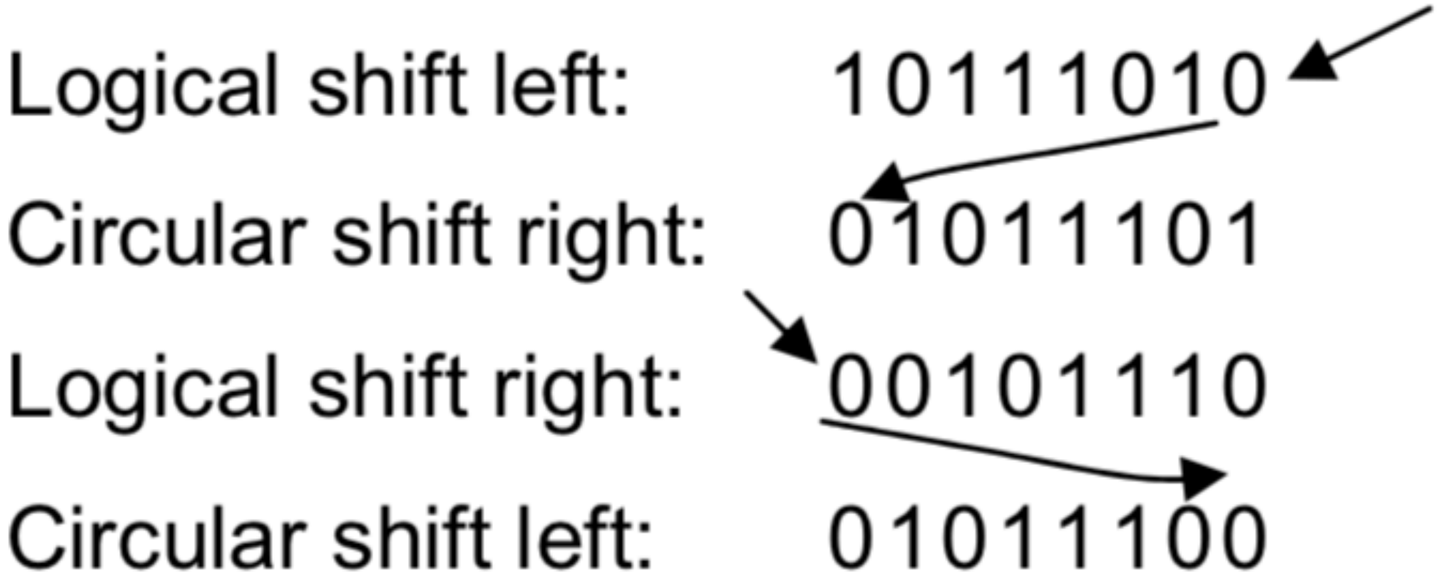
(I) Selective set operation,
(II) Selective complement operation
(III) Selective clear operation
(IV) Mask operation
(V) Clear operation
(VI) Insert operation, by setting low order 4 bits of A to 1111

Q3:- Starting from an initial value of 8 bits register R=01010101, Determine the values in R after performing six times logical shift left.

Q4:- What is the value of output H in shifter , if H is 1001, s=1, Ir=1 and IL=0. ?

Q5:- Starting from an initial value of R=11011101, determine the sequence of binary values in R after performing a logical shift-left, followed by a circular shift right, followed by a logical shift right and a circular shift left ?

R = 11011101

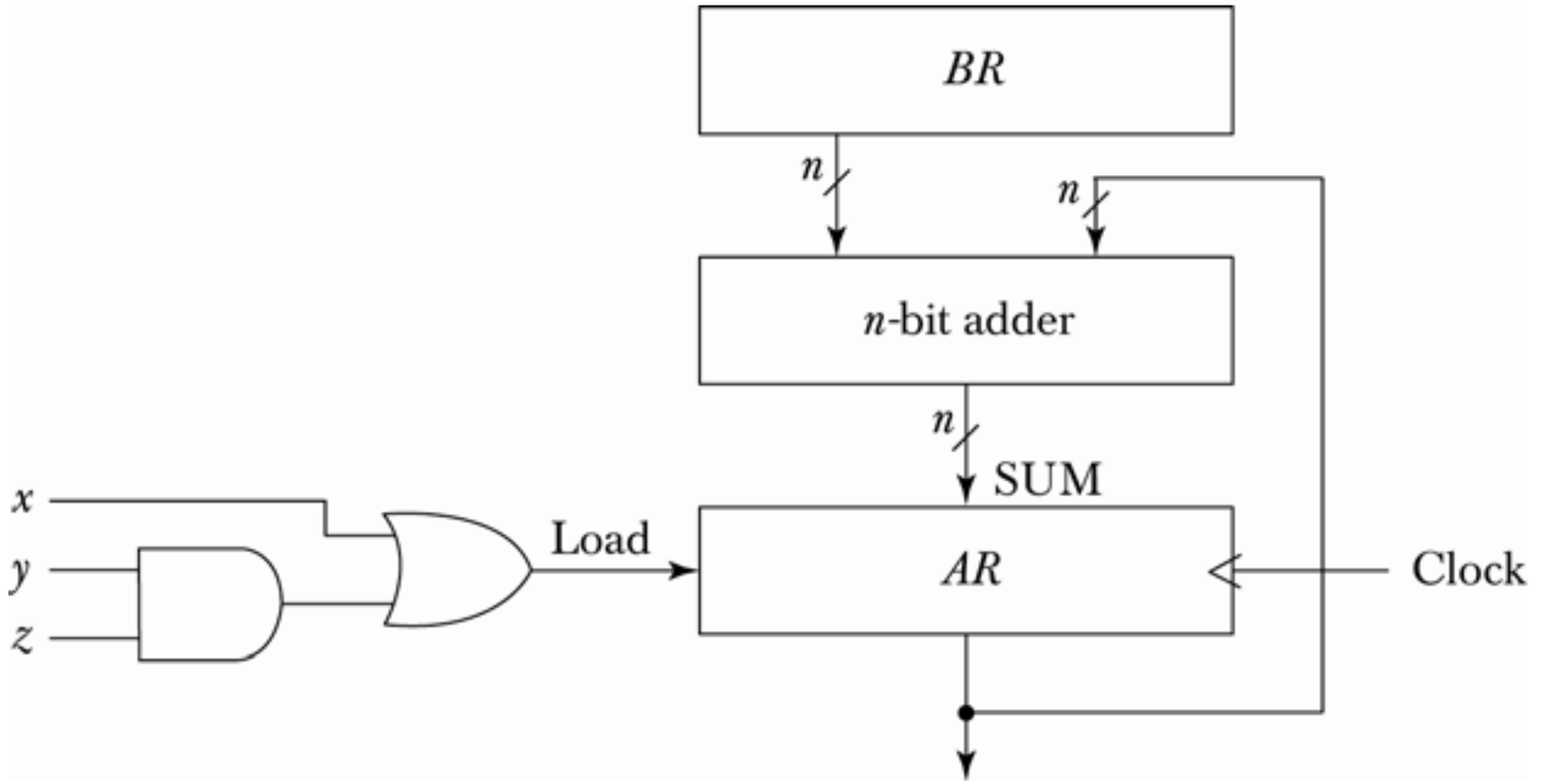

Logical shift left: 10111010
Circular shift right: 01011101
Logical shift right: 00101110
Circular shift left: 01011100

Q6:- Insert binary value 0101 into the high order four bits of register A, If initial value of A= 1100 0101 0101 1100. Determine new A ?

Q7:- Draw the block diagram for the hardware that implements the following statements:

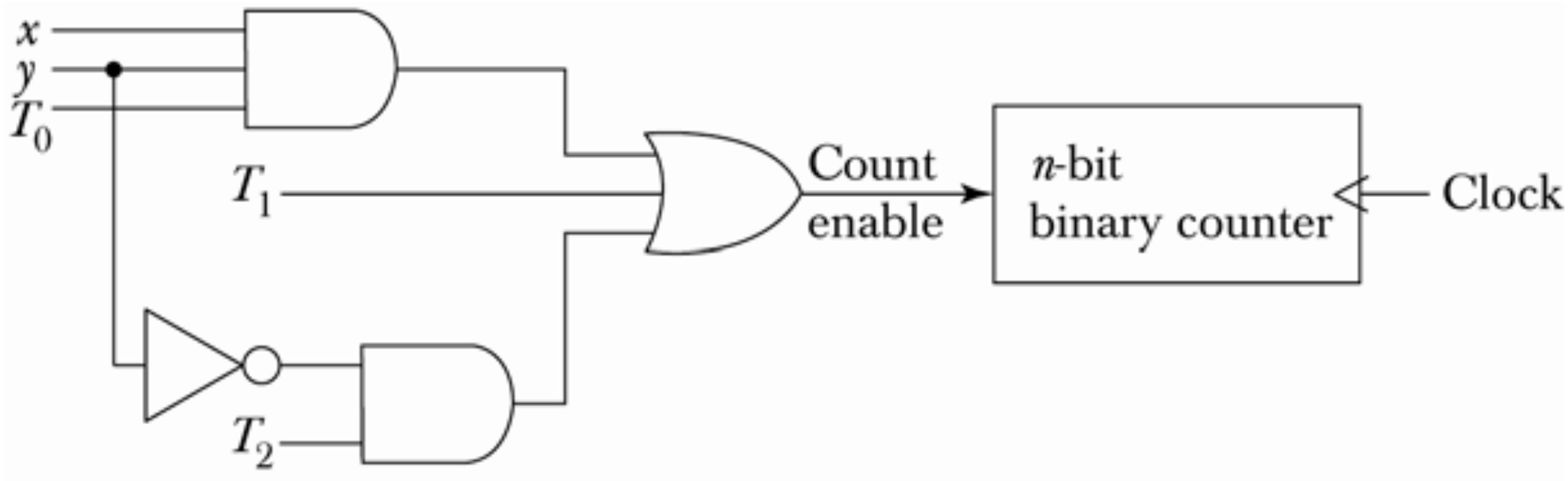
$$x + yz: \quad AR \leftarrow AR + BR$$

where AR and BR are two n-bit registers and x, y, and z are control variables. Include the logic gates for the control function. (Remember that the symbol + designates an OR operation in a control or Boolean function but that it represents an arithmetic plus in a microoperation.)


BR
n
n
n-bit adder
n
SUM
x
y
z
Load
AR
Clock

Q8:- Show the hardware that implements the following statement. Include the logic gates for the control function and a block diagram for the binary counter with a count enable input.

$$xyT_0 + T_1 + y'T_2: \quad AR \leftarrow AR + 1$$


x
y
T_0
T_1
T_2
Count
enable
n-bit
binary counter
Clock

Q9:- Register *A* holds the 8-bit binary 11011001. Determine the *B* operand and the logic microoperation to be performed in order to change the value in *A* to:

a. 01101101

b. 11111101

Q9:-

(a) A = 11011001

B = 10110100 $\oplus$

A $\leftarrow$ A $\oplus$ B 01101101

A = 11011001

B = 11111101 (OR)

11111101 A $\leftarrow$ AVB

A group of bits that tell the computer to perform a specific operation is known as	
a.	Instruction code
b.	Micro-operation
c.	Accumulator
d.	Register

The load instruction is mostly used to designate a transfer from memory to a processor register known as	
a.	Accumulator
b.	Instruction Register
c.	Program counter
d.	Memory address Register