College of Computer and Information Sciences
Computer Science Department
Computer Organization (CSC 220)

Homework-2

2nd Semester 1443 (2021-2022)

Last date of submission: April 14, 2022 (Thursday)

Student's Name: _____

Student's ID: _____

Section #: _____

Signature of the Student:

Section	NCAAA CLO	Maximum	Score	Remark
Q1	2.1 Combinational and sequential circuits design	1		
Q2	2.2 Register, counter, and RAM design	1		
Q3	2.2 Register, counter, and RAM design	1		
Total		3		

Question 1

(a): For the given diagram below, **draw** the Q and Y activities, assuming Q start at 0?

(b) For the following asynchronous counter, draw the output waveform at Q_0, Q_1, Q_2.

Question 2: 100011 2^6 $35 < 64$

(a) Show how to construct an asynchronous MOD-35 counter.

(b) Configure the counter in the figure below to count the following cycle:
0, 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13/ …..

Question 3:

(a) Design a 4-bit register that can perform the following functions

S1	S0	Function
0	0	Parallel Load
0	1	Rotate right
1	0	Complement each bit
1	1	No change

DI = datainput | DO = dataoutput | R/W = read/write

(b) Design a 4 × 4 RAM Using a 4 × 4 RAM Cell Array