| University	:	Menoufia		Date	:	6/1/2019
Faculty	:	Electronic Engineering		Time	:	3 Hours
Department	:	Comp. Science & Eng.		No. of pages	:	2
Academic level	:	Prep. Year, 1st term		Full Mark	:	60 Marks
Course Name	:	Logic Design		Exam	:	First term Final Exam
Course Code	:	CSE 324		Examiner	:	Dr. Ahmed Shehata Part II

(Part II) إيدأ إجابة هذا الجزء من اليمين

Answer the following questions

Question number 1:

a. According to JK flip Flop and the timing diagram Shown, draw the output Q of the flip flop. Assuming Q=0 at start.   (5 Marks)
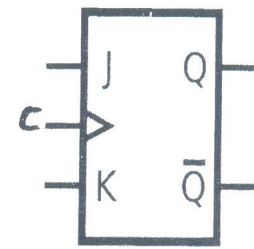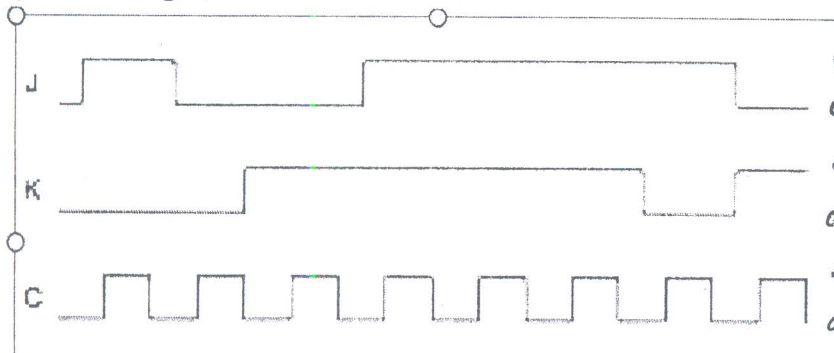
b. Construct a 3 to 8 line decoder by using 2-to-4 line decoder, active low output and a single active high enable.   (5 Marks)

Question number 2:

a. Design an asynchronous modulo 6 counter using JK flip flop -ve edge triggered
(5 Marks)

b. Design a counter with *T flip-flops* that goes through the following binary repeated sequence: 0, 1, 3, 7, 6, 4. Show that when binary states 010 and 101 are considered as *don't care* conditions.   (5 Marks)

Question number 3:

a. Draw a parallel input serial output 3-bit shift register circuit diagram and implementation.   (5 Marks)

b. Implement a 4-bit bidirectional shift register using a signal that control the shift direction.

(5 Marks)

With my best wihes
Dr. Ahmed Shehata

Menoufia University Faculty of Electronic Engineering Department of Computer Science &Eng., Preparatory year		Final 1st Term Exam Logic design Date: 6-1-2019 Time: 180 min
	جامعة المنوفية	Number of papers: 2

(Part I) إيدأ إجابة هذا الجزء من اليسار

1-Answer the following questions:

1-(a) What is the range of signed and unsigned decimal values can be represented using 10 bits?

1-(b) Complete the missing parts

$(23)_{10} = (\ldots)_2 = (\ldots)_8 = (\ldots)_{16}$

$(44.16)_8 = (\ldots\ldots\ldots)_{10} = (\ldots\ldots\ldots)_{16}$

$(13)_{10} = (\ldots\ldots\ldots)_{2421} = (\ldots\ldots\ldots)_{Ex-3} = (\ldots)_{gray}$

$\qquad\qquad\qquad\qquad$ **(10 degree)**

2- (a) Perform the following operations in 2's complement system. Use 8 bit (including the sign bit) for each number.

- Add +16 to -18
- Subtract +22 from -18
- Subtract -22 from -18

2- (b) Subtract 17 from 23 using normal subtraction, and 1's complement method

$\qquad\qquad\qquad\qquad$ **(10 degree)**

3-(a) Minimize the following equation using Boolean Algebra

$$X = (\overline{C+D}) + \overline{A}\,C\,\overline{D} + A\,\overline{BC} + \overline{AB}CD + AC\overline{D}$$

3-(b) Draw the circuit diagram of the following equation:

$$X = A\,B\,C + \overline{A}\,(B+\overline{C}) + A(B\,C + \overline{B}\,\overline{C})$$

Then simplify the above equation using K-Map,
Then draw the circuit diagram of the obtained simplified equation.

$\qquad\qquad\qquad\qquad$ **(10 degree)**

With my best wihes

Prof. Nawal El-Fishawy

مع اطيب تمنياتى بالتوفيق