# Unit 12 - Week 11



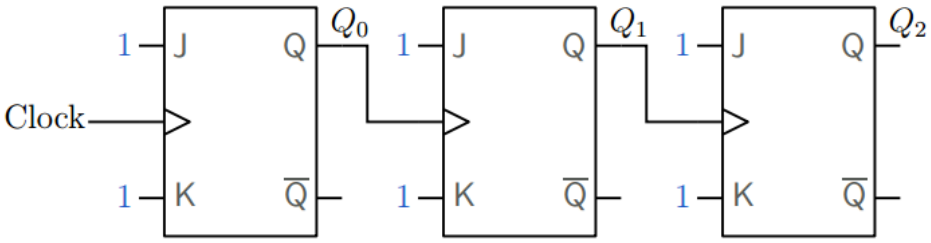
## Assignment-11

**The due date for submitting this assignment has passed.**
**As per our records you have not submitted this assignment.**

**Due on 2018-04-11, 23:59 IST**

Week-11 Assignment

1) How would you describe the counter shown in the figure? *1 point*




- $3-bit\ binary\ synchronous\ up\ counter$
- $3-bit\ binary\ ripple\ up\ counter$
- $3-bit\ binary\ synchronous\ down\ counter$
- $3-bit\ binary\ ripple\ down\ counter$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$3-bit\ binary\ ripple\ down\ counter$

2) For the counter of $Q-1$, the initial count is $Q_2Q_1Q_0 = 000$. What is the count after $13$ clock pulses? *1 point*

- $Q_2Q_1Q_0 = 011$
- $Q_2Q_1Q_0 = 100$
- $Q_2Q_1Q_0 = 010$
- $Q_2Q_1Q_0 = 111$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_2Q_1Q_0 = 011$

3) For the counter of $Q-1$, the initial count is $Q_2Q_1Q_0 = 000$. What is the count after $59$ clock pulses? *1 point*

- $Q_2Q_1Q_0 = 110$
- $Q_2Q_1Q_0 = 011$
- $Q_2Q_1Q_0 = 101$
- $Q_2Q_1Q_0 = 100$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_2Q_1Q_0 = 101$

4) For the counter of $Q-1$, the initial count is $Q_2Q_1Q_0 = 010$. What is the count after $23$ clock pulses? *1 point*

- $Q_2Q_1Q_0 = 010$
- $Q_2Q_1Q_0 = 011$

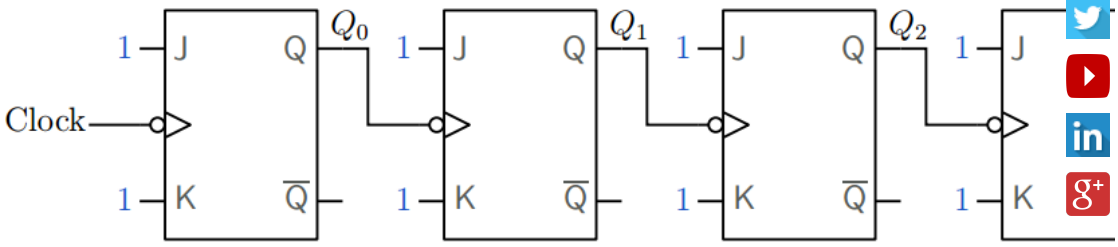
$Q_2Q_1Q_0 = 110$

$Q_2Q_1Q_0 = 000$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_2Q_1Q_0 = 011$

5) How would you describe the counter shown in the figure? *1 point*




$4-bit\ binary\ synchronous\ up\ counter$

$4-bit\ binary\ synchronous\ down\ counter$

$4-bit\ binary\ ripple\ up\ counter$

$4-bit\ binary\ ripple\ down\ counter$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$4-bit\ binary\ ripple\ up\ counter$

6) For the counter of $Q-5$, the initial count is $Q_3Q_2Q_1Q_0 = 0000$. What is the count after $19$ clock pulses? *1 point*

$Q_3Q_2Q_1Q_0 = 0010$

$Q_3Q_2Q_1Q_0 = 0100$

$Q_3Q_2Q_1Q_0 = 1011$

$Q_3Q_2Q_1Q_0 = 0011$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_3Q_2Q_1Q_0 = 0011$

7) For the counter of $Q-5$, the initial count is $Q_3Q_2Q_1Q_0 = 1010$. What is the count after $29$ clock pulses? *1 point*

$Q_3Q_2Q_1Q_0 = 0111$

$Q_3Q_2Q_1Q_0 = 1101$

$Q_3Q_2Q_1Q_0 = 1001$

$Q_3Q_2Q_1Q_0 = 0101$

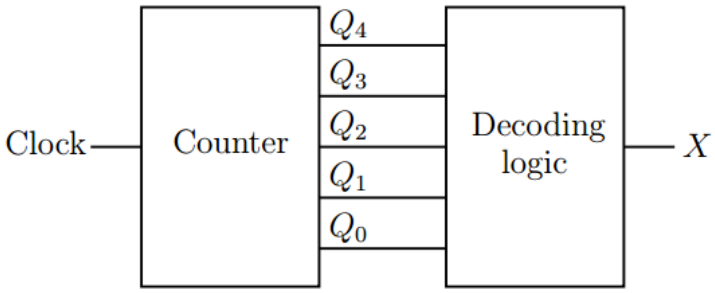
**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_3Q_2Q_1Q_0 = 0111$

8) Consider a mod-24 counter (see figure) with the following sequence (with each state characterized by the decimal number represented by $Q_4Q_3Q_2Q_1Q_0$, $Q_4$ being the MSB and $Q_0$ the LSB): *1 point*

$0 \rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow \cdots \rightarrow 23 \rightarrow 0 \rightarrow 1 \rightarrow 2 \cdots$

We want decoding logic to produce $X$ which is high when the counter output is $16, 17, 18,$ or $19$ (decimal) and low otherwise. Which one of the following functions is appropriate?



$X = Q_4 \overline{Q_3}\, Q_1$

$X = Q_4 \overline{Q_3}\, \overline{Q_2}$

$X = Q_4 Q_2 \overline{Q_1}\, \overline{Q_0}$

$X = Q_4 Q_3 \overline{Q_2} + Q_4 \overline{Q_3} Q_0$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$X = Q_4 \overline{Q_3}\, \overline{Q_2}$

9) In the counter of $Q-8$, if the clock frequency is $15\ kHz$, what is the frequency of the waveform $X(t)$? *1 p*

$1.8\ kHz$

$2.5\ kHz$

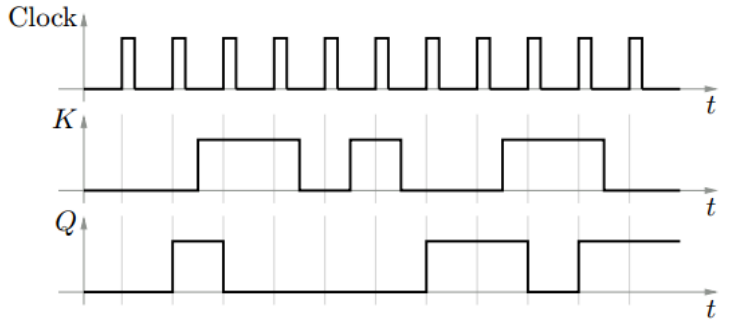
$1.2\ kHz$

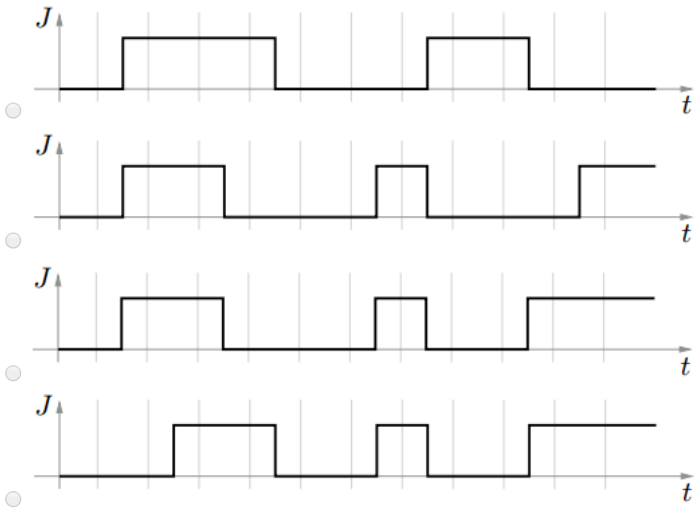
$625\ Hz$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$625\ Hz$

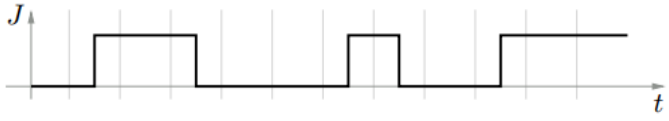
10) The clock, $K$, and $Q$ waveforms for a positive edge-triggered $JK$ flip-flop are shown in the figure. Which of the $J$ waveforms is consistent with this situation? ***1 point***



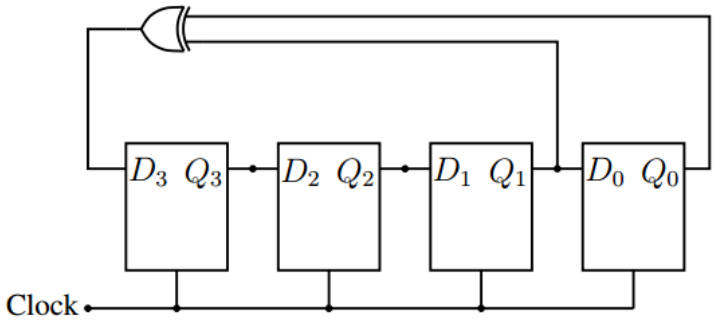




**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**




11) In the shift register shown in the figure, $Q_3 Q_2 Q_1 Q_0 = 1001$ initially. What are the contents of the register after four clock pulses? ***1 point***

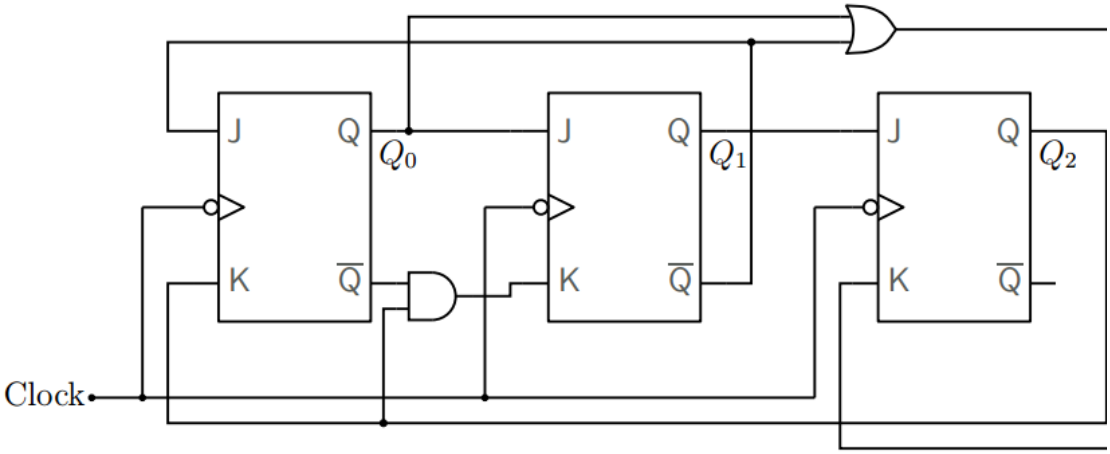



- $Q_3Q_2Q_1Q_0 = 0101$
- $Q_3Q_2Q_1Q_0 = 0110$
- $Q_3Q_2Q_1Q_0 = 1101$
- $Q_3Q_2Q_1Q_0 = 0011$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_3Q_2Q_1Q_0 = 0101$

12) What is the modulus number of the counter shown in the figure if $Q_2Q_1Q_0 = 001$ is one of the counter states? ***1 point***




- 8
- 7
- 6
- 5

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
6

13) For the counter of $Q - 12$, the initial state is $Q_2Q_1Q_0 = 001$. What is the state after 15 clock pulses? ***1 point***

- $Q_2Q_1Q_0 = 111$
- $Q_2Q_1Q_0 = 010$
- $Q_2Q_1Q_0 = 000$
- $Q_2Q_1Q_0 = 110$

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
$Q_2Q_1Q_0 = 010$

14) The minimum number of flip-flops required to design a mod-60 counter is ***1 point***

- 5

6

7

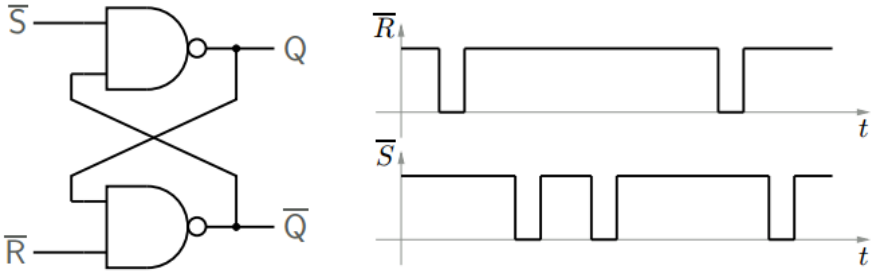
8

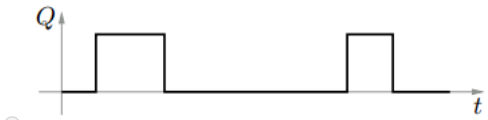
**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
6

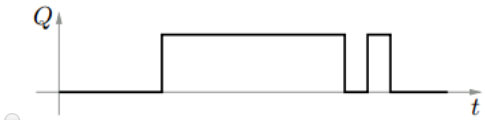
15) The $\overline{S}$ and $\overline{R}$ inputs shown in the figure are applied to a NAND latch. Assuming that $Q$ is $0$ initially, which plot gives the correct waveform for $Q$?

1 p









**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**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