

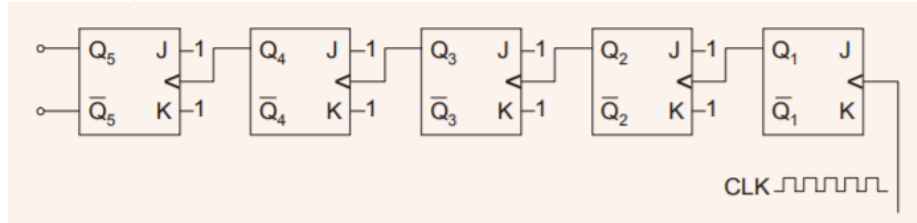
solution assignment 10

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1 question

The input frequency for the given counters 1 MHz, the output frequency observed at Q4 is



2 explanation

The time period doubles for every successive pass from one flip-flop to other.
Let the initial time period and frequency be T, F as the time period is getting doubles so time period at $Q_1 = 2T$
Similarly at $Q_2 = 4T$; at $Q_3 = 8T$; at $Q_4 = 16T$
so the time period is getting increased in the form of $2^n T$ where n can take the value of required output.

So, frequency at Q_4 can be $F = \frac{1}{T \text{ at } Q_4}$

$$F = \frac{1}{16}$$

(as initially $F = 1\text{MHz}$ so $T \text{ at initial} = 1 \text{ sec}$)

Also frequency can be written as $F = \frac{1}{2^4} = \frac{1}{16} = 62.5\text{KHz}$