Bahan Ajar

Chapter 12

Materi Pembelajaran

Matakuliah :

DESAIN DAN SIMULASI RANGKAIAN ELEKTRONIKA

Kode Matakuliah : SKO 21425

Prodi : SISTEM KOMPUTER

Dosen Pengampu Matakuliah:

Bayu Nugroho, S.Kom., M.Eng

Chapter 12

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Synchronous binary counter

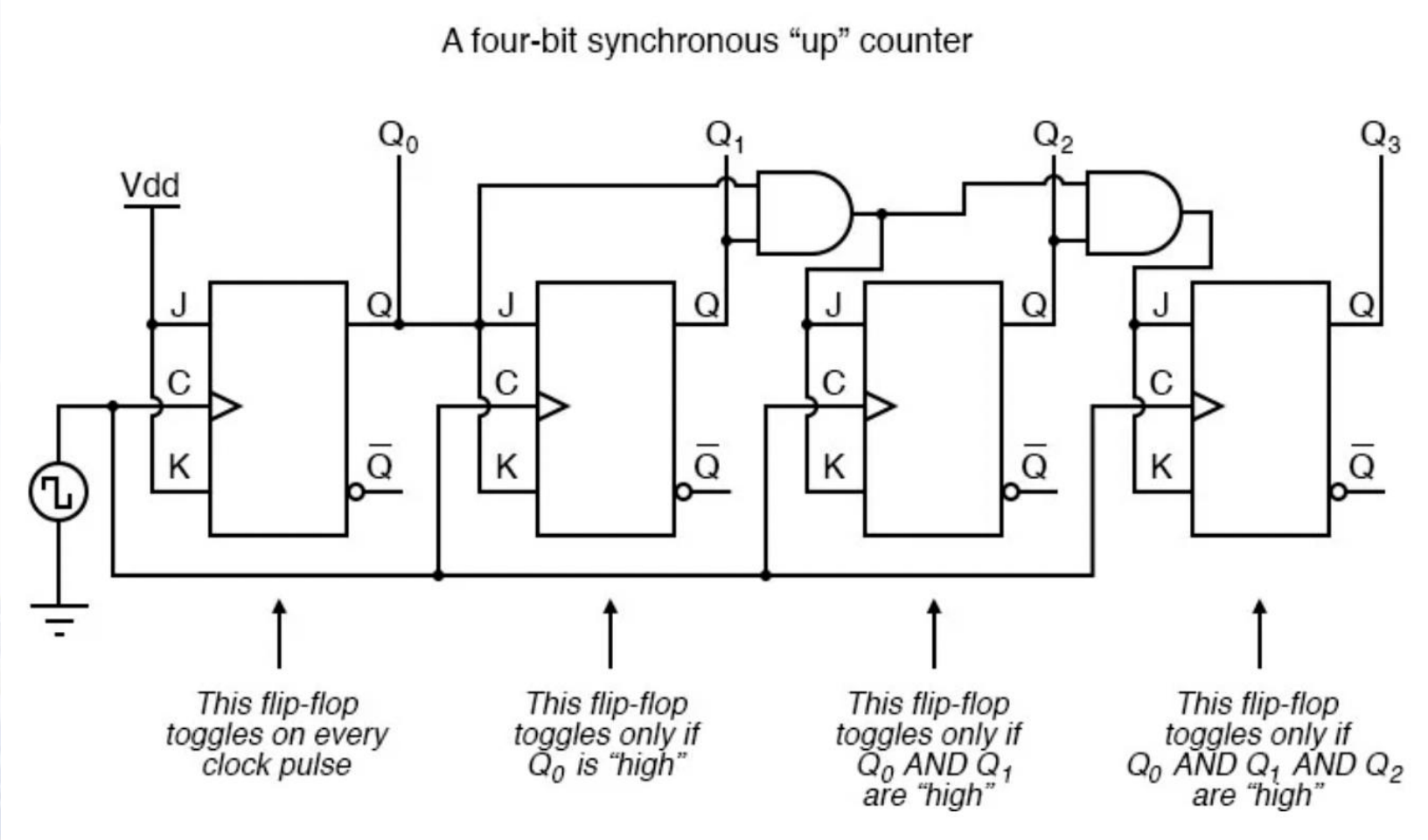
A synchronous counter, in contrast to an asynchronous counter, is one whose output bits change state simultaneously, with no ripple.

The only way we can build such a counter circuit from J-K flip-flops is to connect all the clock inputs together, so that each and every flip-flop receives the exact same clock pulse at the exact same time.

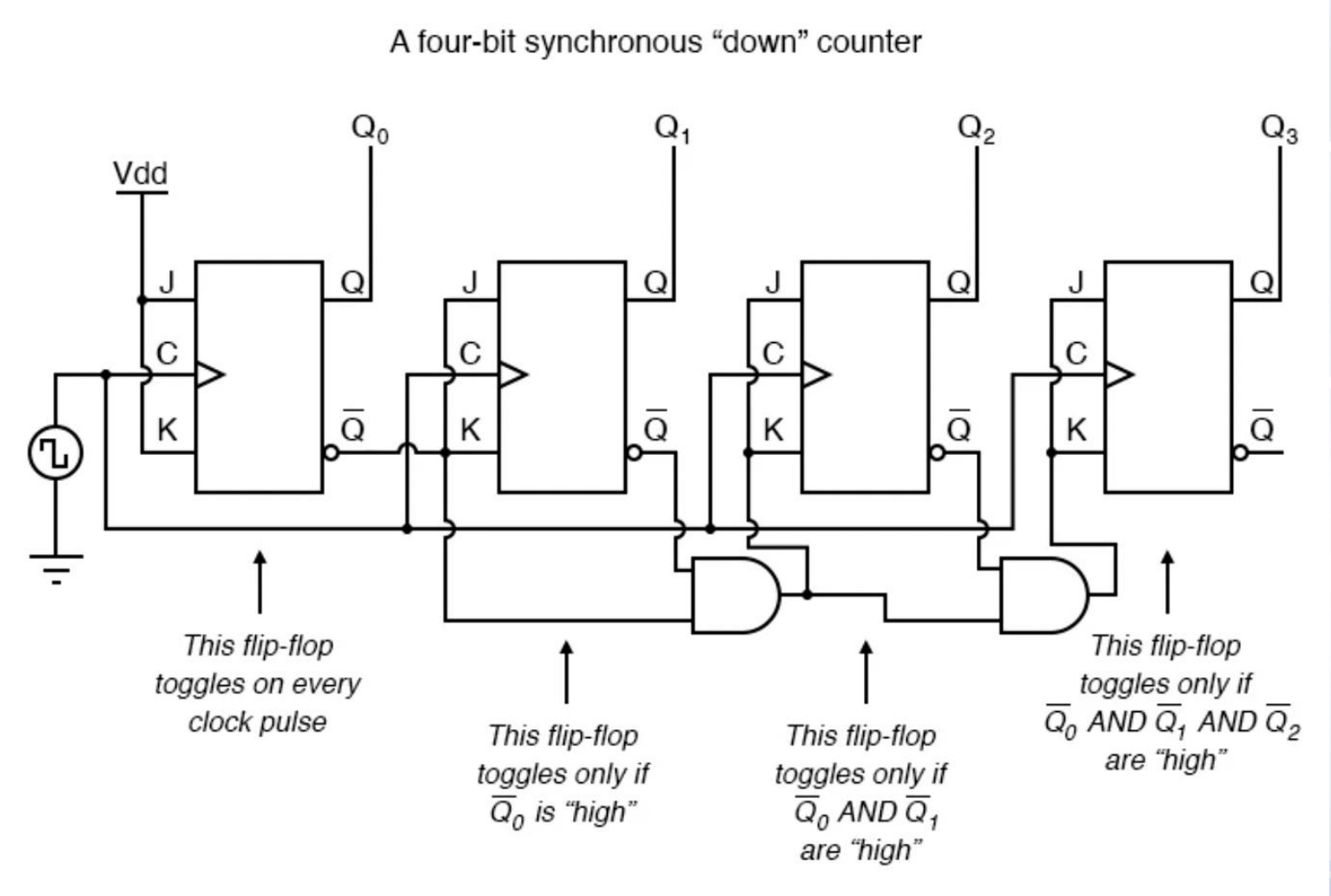
Synchronous UP counter

If we enable each J-K flip-flop to toggle based on whether or not all preceding flip-flop outputs (Q) are “high,” we can obtain the same counting sequence as the asynchronous circuit without the ripple effect, since each flip-flop in this circuit will be clocked at exactly the same time:

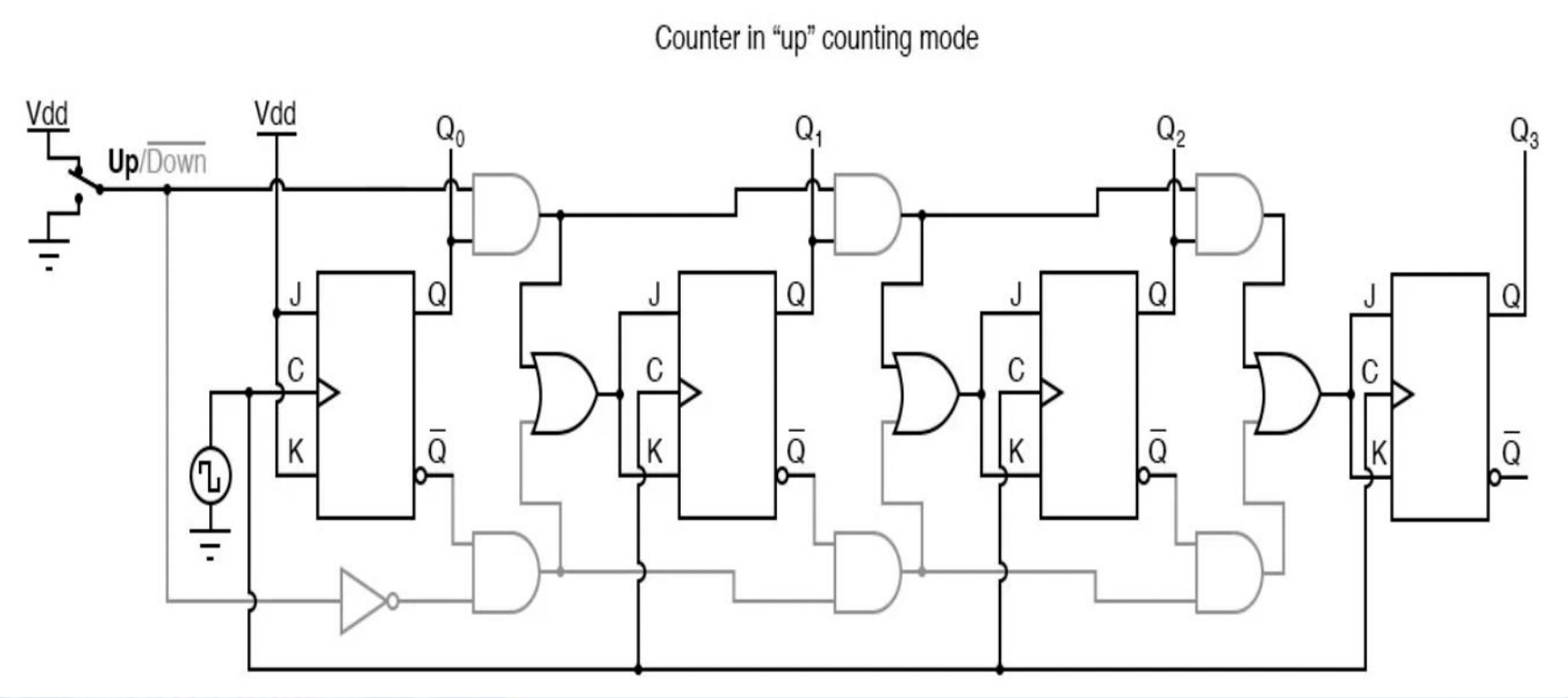
Synchronous UP counter



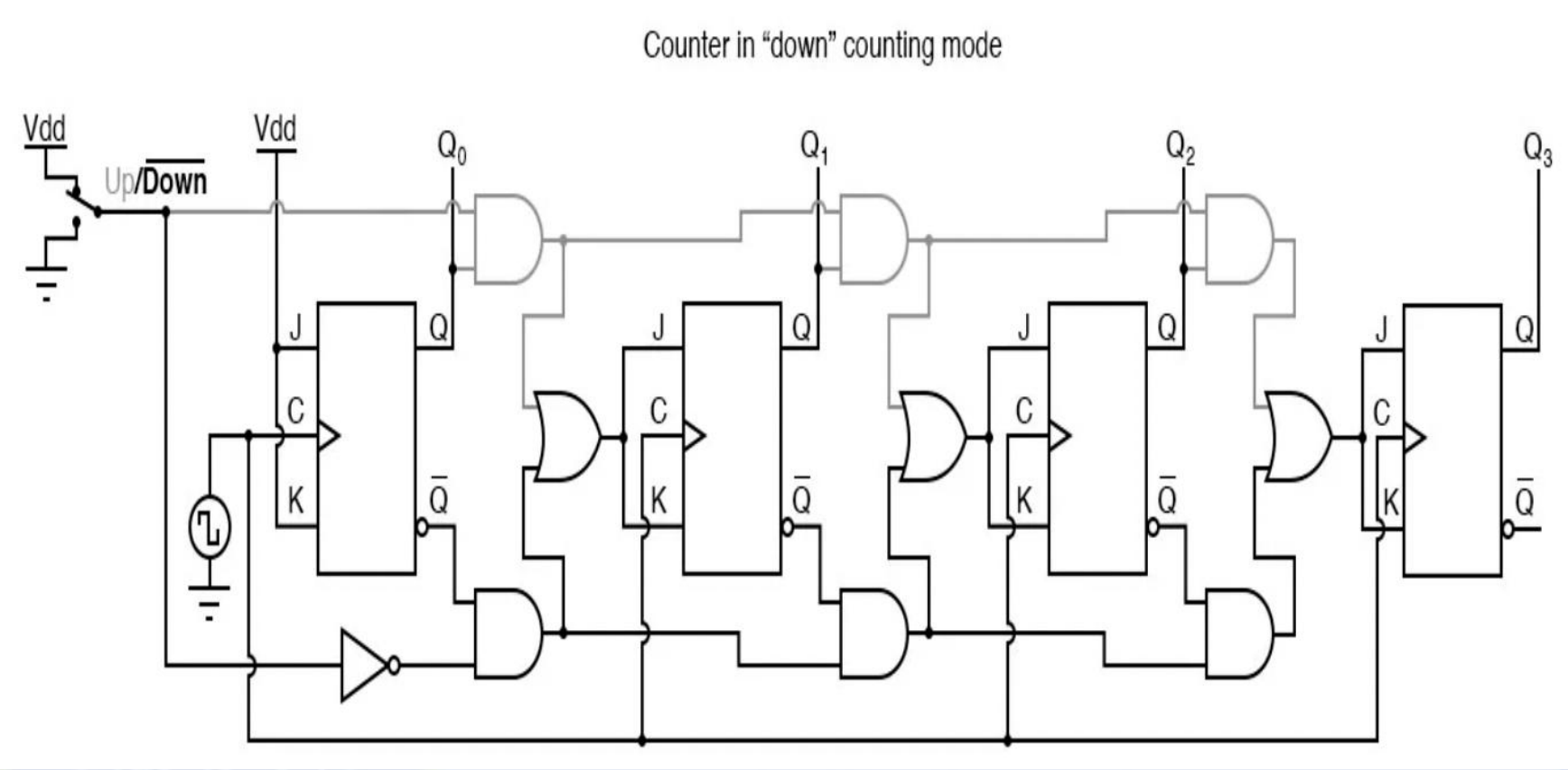
Synchronous Down counter



Counter Circuit with Selectable “up” and “down” Count Modes



Counter Circuit with Selectable “up” and “down” Count Modes



Tugas Mandiri (teori):

Lakukan pembuatan skema rangkaian Synchronous Up dan Down Counter 7 Segment menggunakan software simulator

Tugas Mandiri (prakt):

Lakukan Simulasi Synchronous Up dan Down Counter 7 Segment menggunakan software simulator dan jelaskan hasil simulasinya.

end