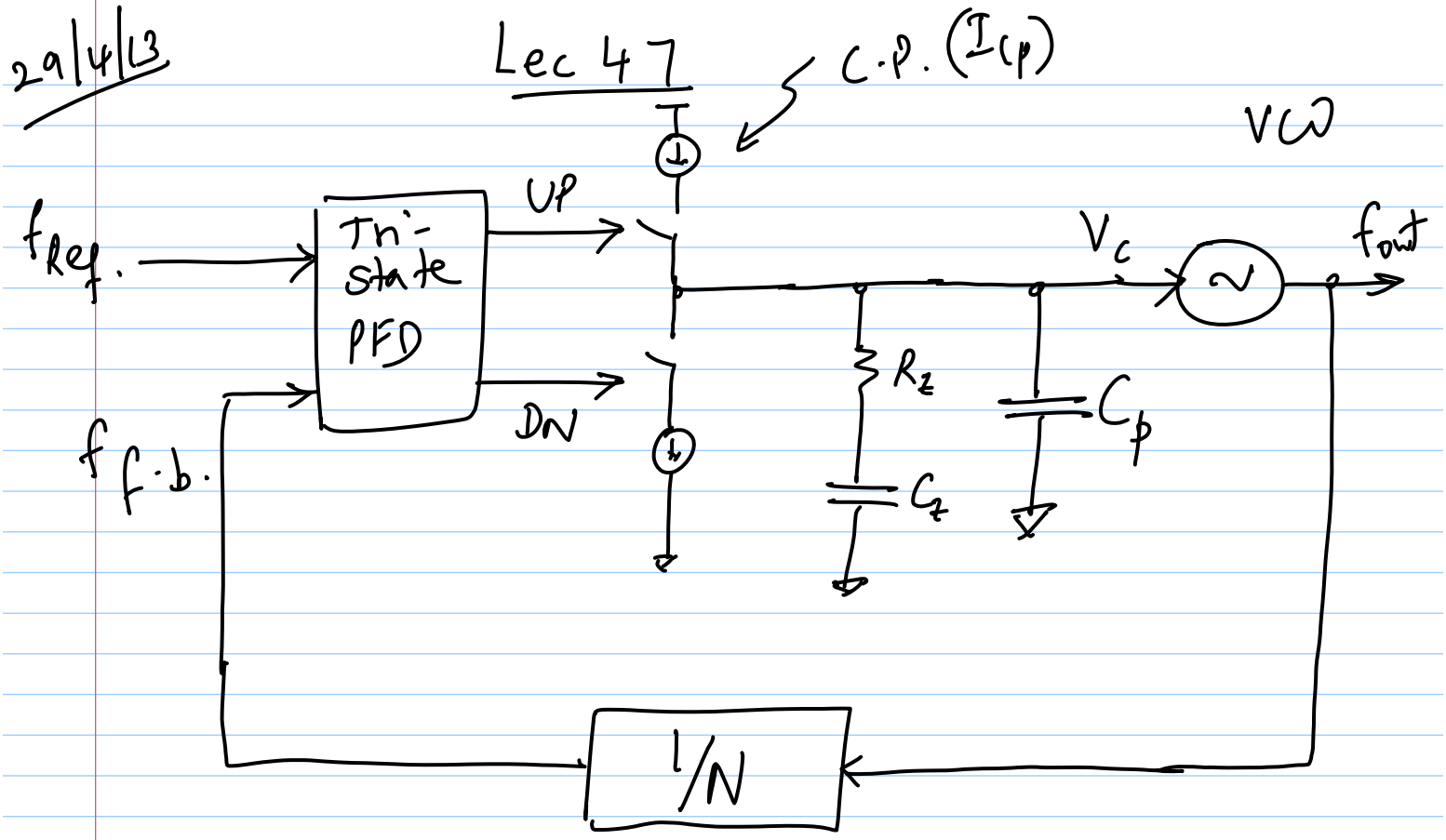
29/4/13

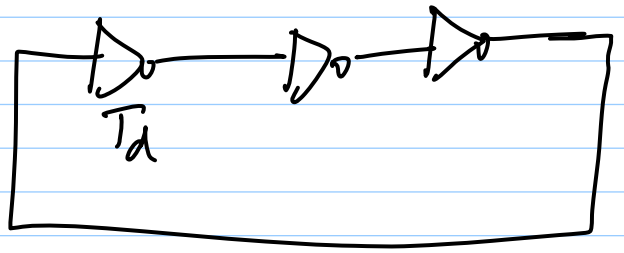
Lec 47

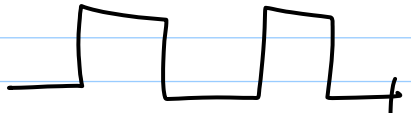


VCO - Voltage controlled Oscillator

1) Schmitt trigger + Integrator
   - Relaxation oscillator

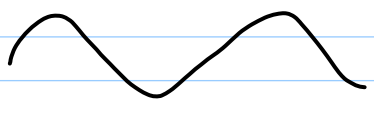
2) Ring oscillator





$$f_0 = \frac{1}{6T_d}$$

3) LC oscillators - resonance

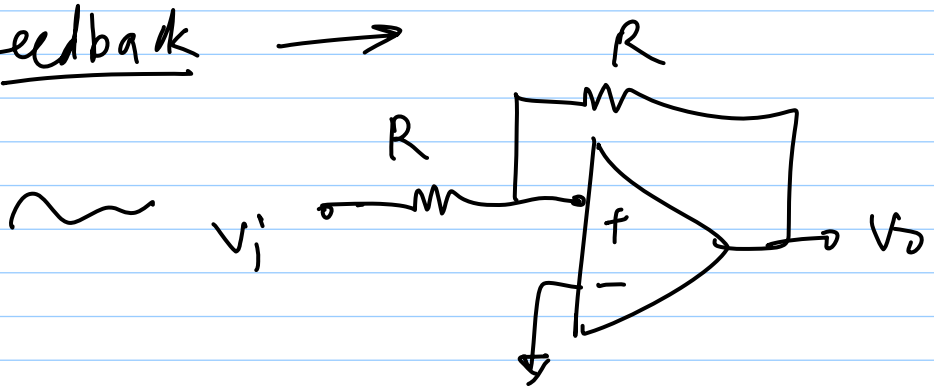


Ring Osc. → processor clocks, serial links

LC Osc. → v transceivers
wireless

F.b. Osc

feedback →

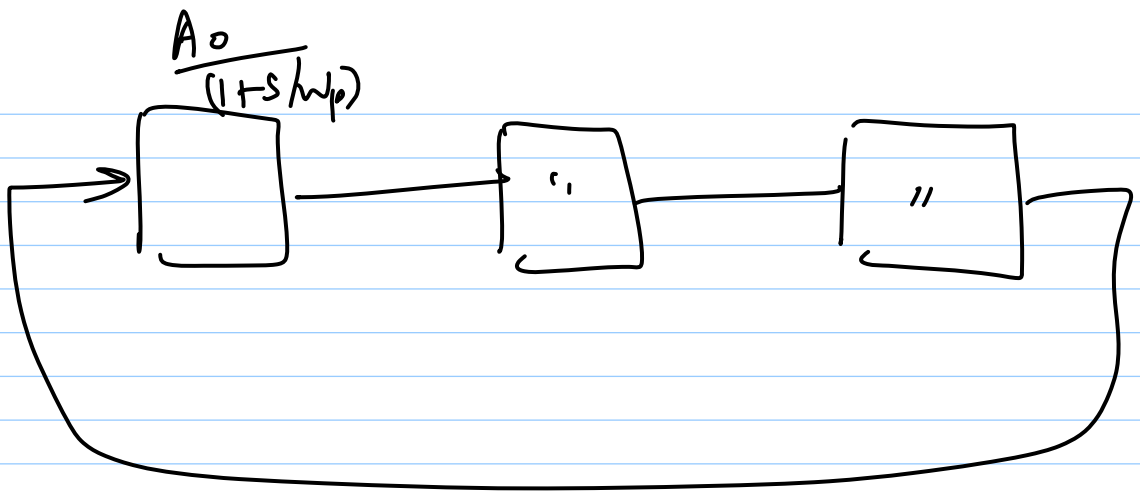


$$|L| = 1 \quad , \quad \angle L = 180^\circ$$

$$CLG = \frac{1}{f} \cdot \frac{L}{1+L} \xrightarrow{} \infty \Rightarrow$$

Barkhausen Criteria

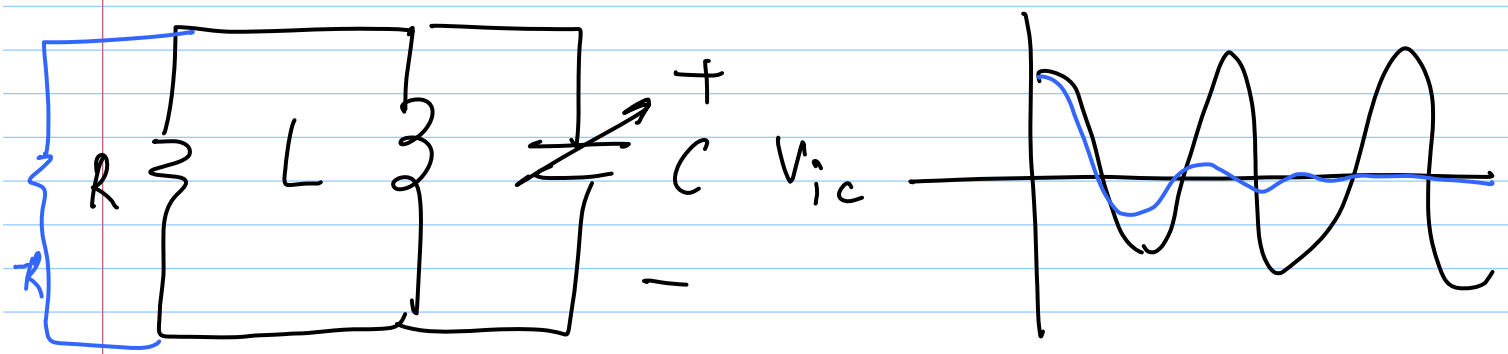
* Necessary but not Sufficient criteria
* 180° additional phase
  360° total phase



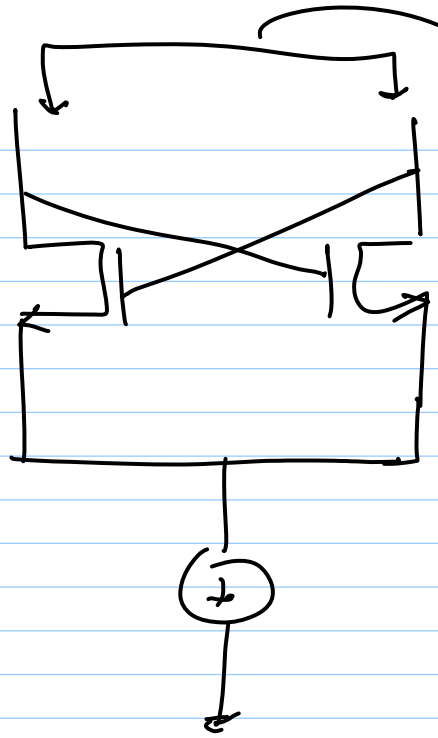
DC
AC
) phases

LC Osc.

$$f = \frac{1}{2\pi\sqrt{LC}}$$



1) Charge periodically
2) f.b — Colpitts Osc.
3) −ve Res — cross-coupled osc.



1) Stable amplitude
2) Well defined freq.
3) $f = f_0 + K_0 V_c$

Further Courses in Analog

1) RFIC – Radio-frequency Integrated Ckts
   → EE6240
2) Data Converters – ADC, DAC
3) Broadband comm. ckts
4) Active Filter Design.