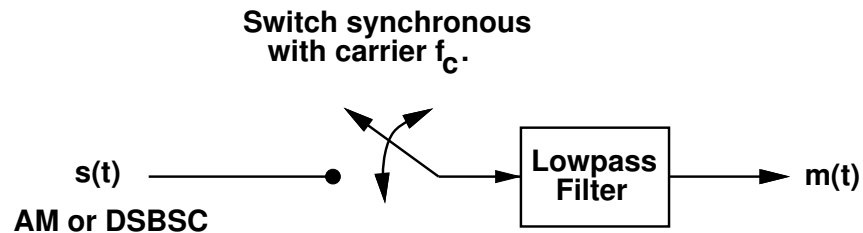


**Homework 5: Due Thursday 5/21 at 4pm.**

1. (15 points) Text, Chapter 3, Number 19.
2. (15 points) Text, Chapter 3, Number 20.
3. (15 points) Text, Chapter 3, Number 21.
4. (20pts) Show that standard AM and DSBSC can be demodulated using the synchronous switching system shown in the figure below. The switching system is equivalent to multiplying the signal  $s(t)$  by a rectangular pulse train, where the width of each pulse  $T_s$  equals the length of time that the switch is down, and the switching period  $T_c = 1/f_c$  equals the period of the pulse train.



5. (15 points) Text, Chapter 3, Number 24.
6. (20 points) Text, Chapter 3, Number 25. (Note: "Beats" occur in sinusoidal signals that have a very low carrier frequency. These are audible signals that sound like a tone that beats at the carrier frequency).