

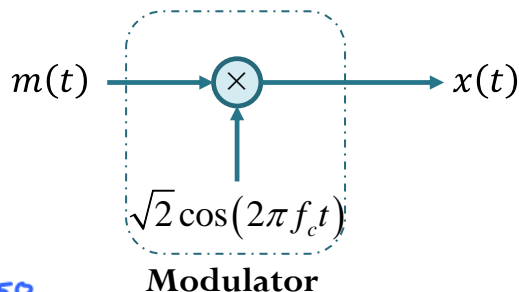
ECS 332: In-Class Exercise # 4

Instructions

1. Separate into groups of no more than three persons.
2. **The group cannot be the same as your former group.**
3. Only one submission is needed for each group.
4. **Do not panic.**

Date: 08 / 09 / 2017		
Name	ID (last 3 digits)	
Prapun	5	5

Suppose a baseband signal $m(t)$ is transmitted via the modulator below. The carrier frequency is set at f_c Hz.

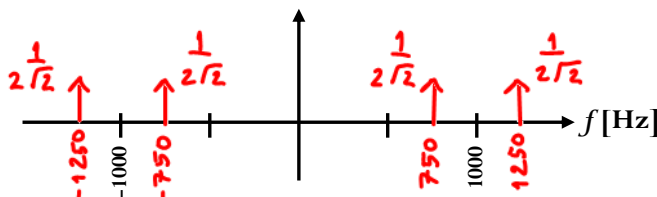
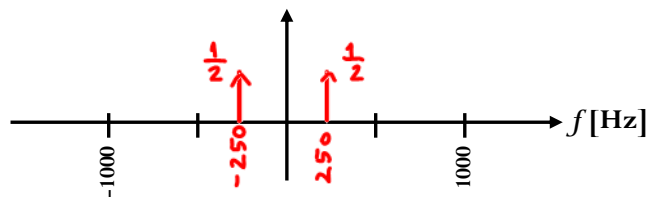


a. Suppose $m(t) = \cos 500\pi t$ and $f_c = 1000$ Hz. Sketch the following signals.

$$\frac{1}{2} \times \sqrt{2} \times \frac{1}{2} = \frac{\sqrt{2}}{4} = \frac{1}{2\sqrt{2}}$$

i. The spectrum $M(f)$ of $m(t)$.

ii. The spectrum $X(f)$ of $x(t)$.



b. (6 pt) Suppose $m(t) = \cos 500\pi t$ and $f_c = 4000$ Hz.

Sketch the following signals for time t between -2 and 2 ms.

i. The message $m(t)$

ii. The transmitted signal $x(t) = \sqrt{2} \cos(\omega_c t) \times m(t)$

