

# ECS 332: In-Class Exercise # 7

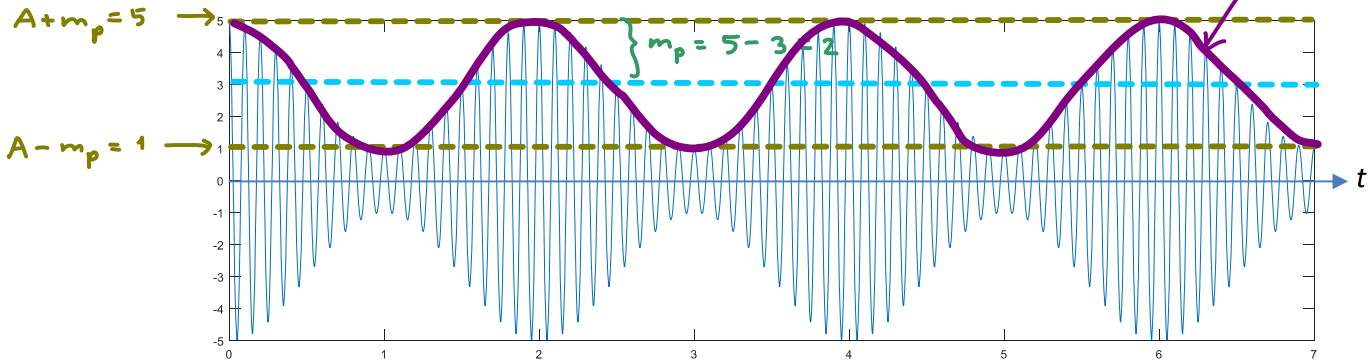
## Instructions

1. Separate into groups of no more than three persons.
2. **The group cannot be the same as any of your former groups.**
3. Only one submission is needed for each group.
4. Write down all the steps that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.
5. **Do not panic.**

Date: <u>20</u> / <u>10</u> /2017		
Name		ID (last 3 digits)
<b>Prapun</b>		<b>5 5 5</b>

1. Find the modulation index used in the following transmitted AM signal  $x_{AM}(t)$ .

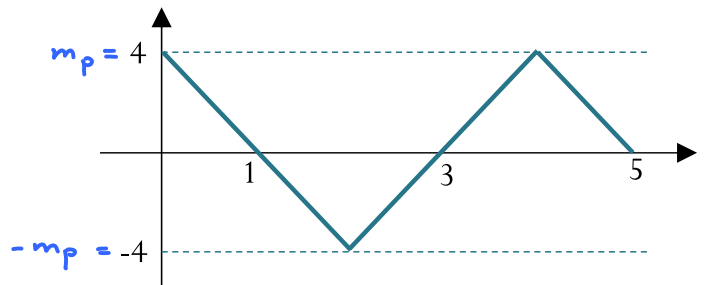
$$A(t) = m(t) + A$$



$$A = \frac{(A+m_p) + (A-m_p)}{2} = \frac{5+1}{2} = 3$$

$$\mu = \frac{m_p}{A} = \frac{2}{3} \approx 66.67\%$$

2. Suppose  $m(t)$  is plotted below.



Assume that the carrier frequency  $f_c$  is large (enough). Plot the corresponding AM signal  $x_{AM}(t)$ .

- (a) when the modulation index is 40%  $= 0.4 = \frac{m_p}{A} = \frac{4}{A} \Rightarrow A = 10$
- (b) when the modulation index is 200%  $= 2 = \frac{m_p}{A} = \frac{4}{A} \Rightarrow A = 2$

