

**NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY**

**Communication Systems (EE-351)**

Assignment 1 (CLO-1)

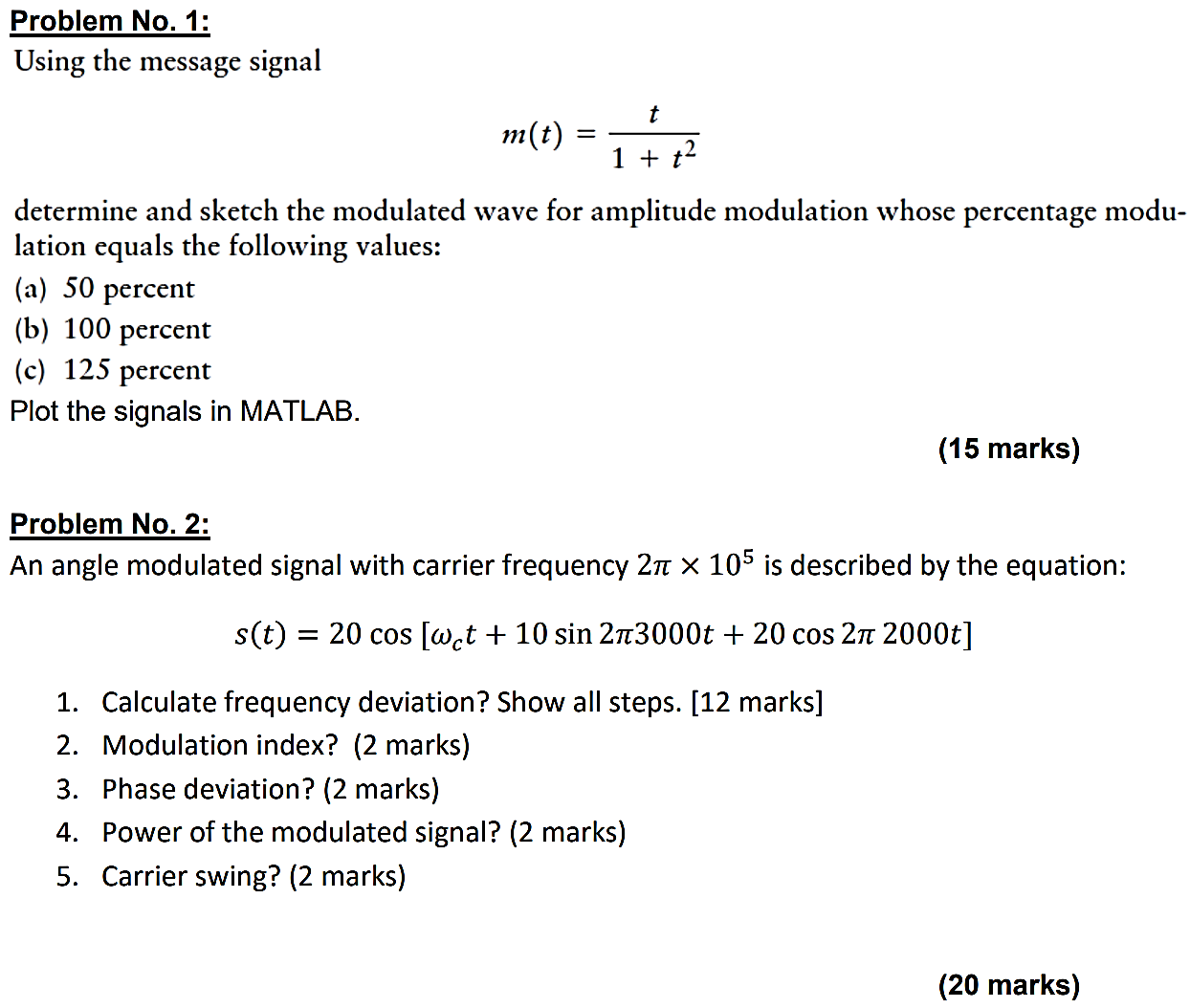
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|  |  |
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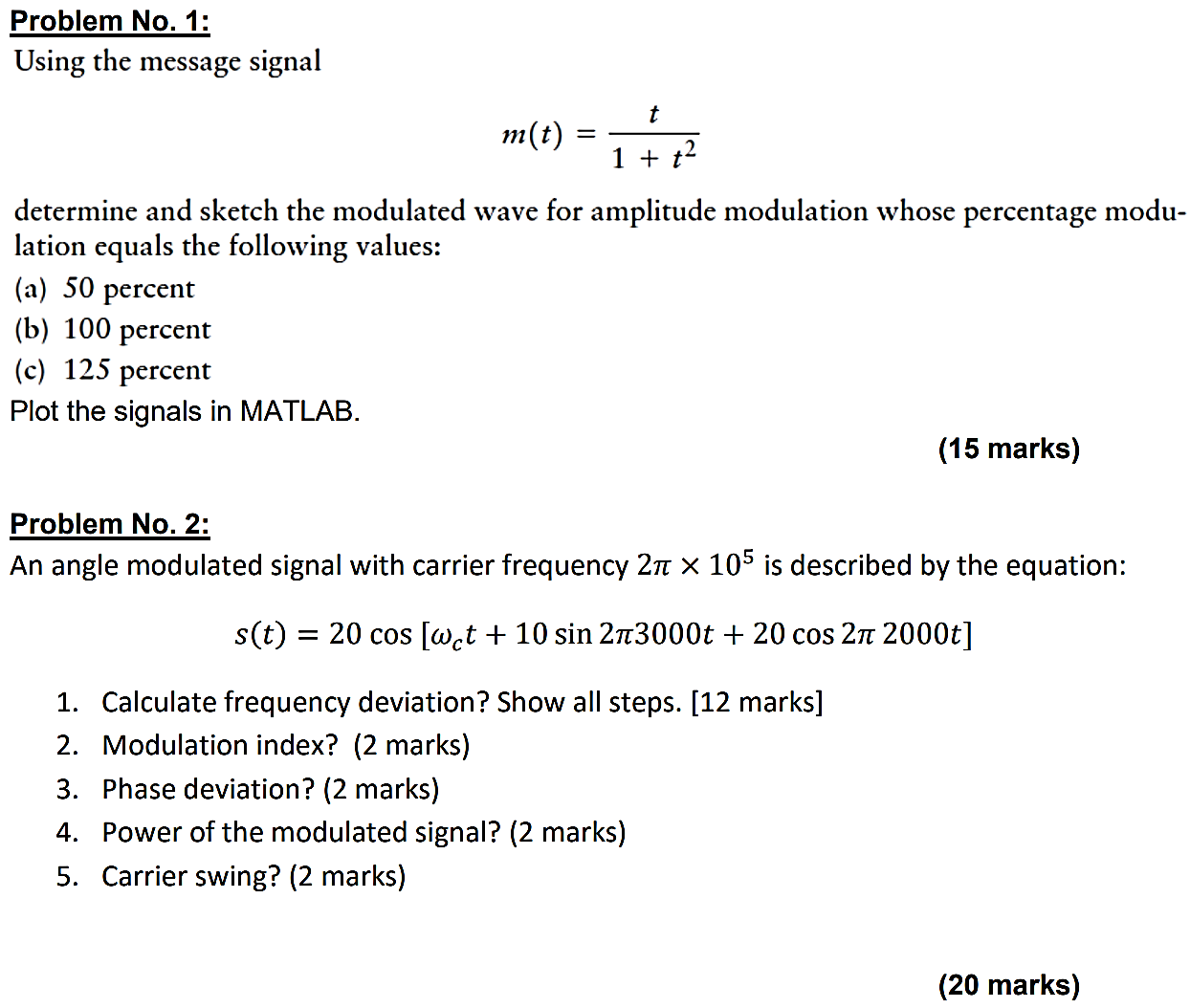
**Submission Details**

|  |  |
| --- | --- |
| Submitted to: | Dr. Huma Ghafoor |
| Class: | BEE-12C |
| Semester: | 6th |

* **No late submissions will be accepted unless a prior approval from the instructor is obtained with extremely genuine reasons. The assignments submitted after the due date/time will be graded zero.**
* **University has zero tolerance for plagiarism and serious penalties apply.**
* **All assignments found mutually copied will be marked zero.**
* **Five marks are reserved for neat and clean work.**



**Problem # 1**



% Define parameters

fc = 20;

fs = 10 \* fc;

T = 1 / fs;

t = 0:T:15;

m\_t = t ./ (1 + t .^ 2);

c\_t = cos(2 \* pi \* fc \* t);

% Define sensitivity list

k\_a\_50 = 0.5;

k\_a\_100 = 1.0;

k\_a\_125 = 1.25;

% Define AM signals

s\_t\_50 = (1 + k\_a\_50 \* m\_t) .\* c\_t;

s\_t\_100 = (1 + k\_a\_100 \* m\_t) .\* c\_t;

s\_t\_125 = (1 + k\_a\_125 \* m\_t) .\* c\_t;

% Plot message signal and AM signals

figure

subplot(2, 1, 1)

plot(t, m\_t)

title('Message signal')

xlabel('Time (s)')

ylabel('Amplitude')

subplot(2, 1, 2)

plot(t, s\_t\_50)

grid

title('AM signal: 50% modulation')

xlabel('Time (s)')

ylabel('Amplitude')

subplot(2, 1, 2)

plot(t, s\_t\_100)

title('AM signals: 100% modulation')

xlabel('Time (s)')

ylabel('Amplitude')

subplot(2, 1, 2)

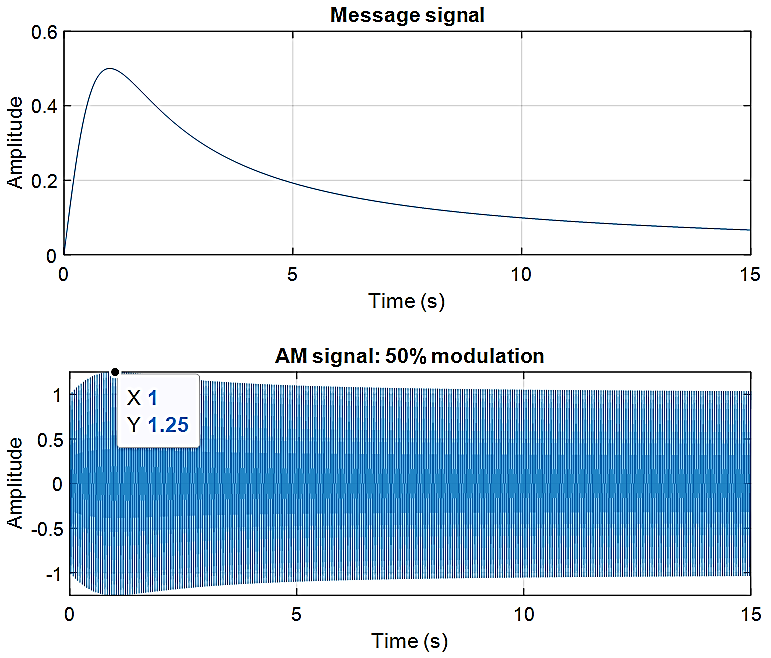
plot(t, s\_t\_125)

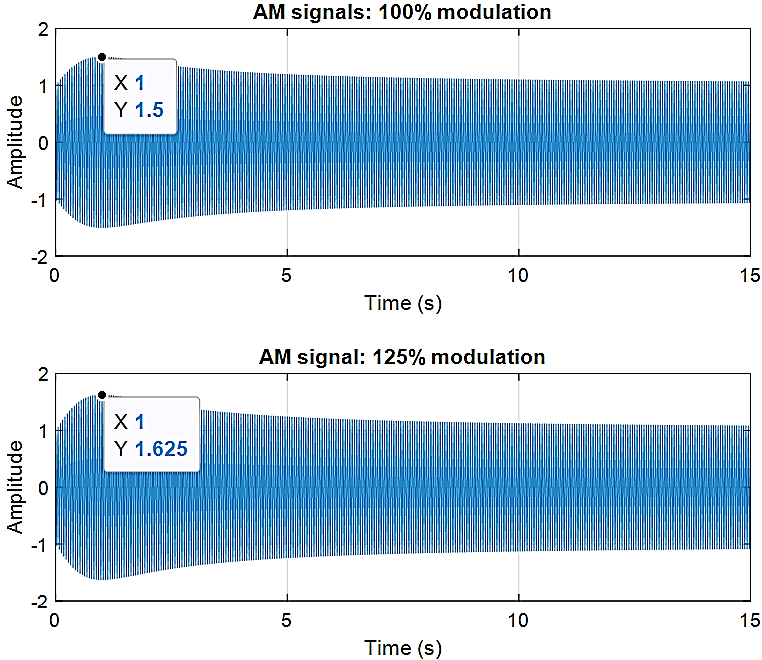
grid

title('AM signal: 125% modulation')

xlabel('Time (s)')

ylabel('Amplitude')





**Problem # 2**

Done by hand on appended pages.