

**NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY**

**Communication Systems (EE-351)**

Assignment 1 (CLO-1)

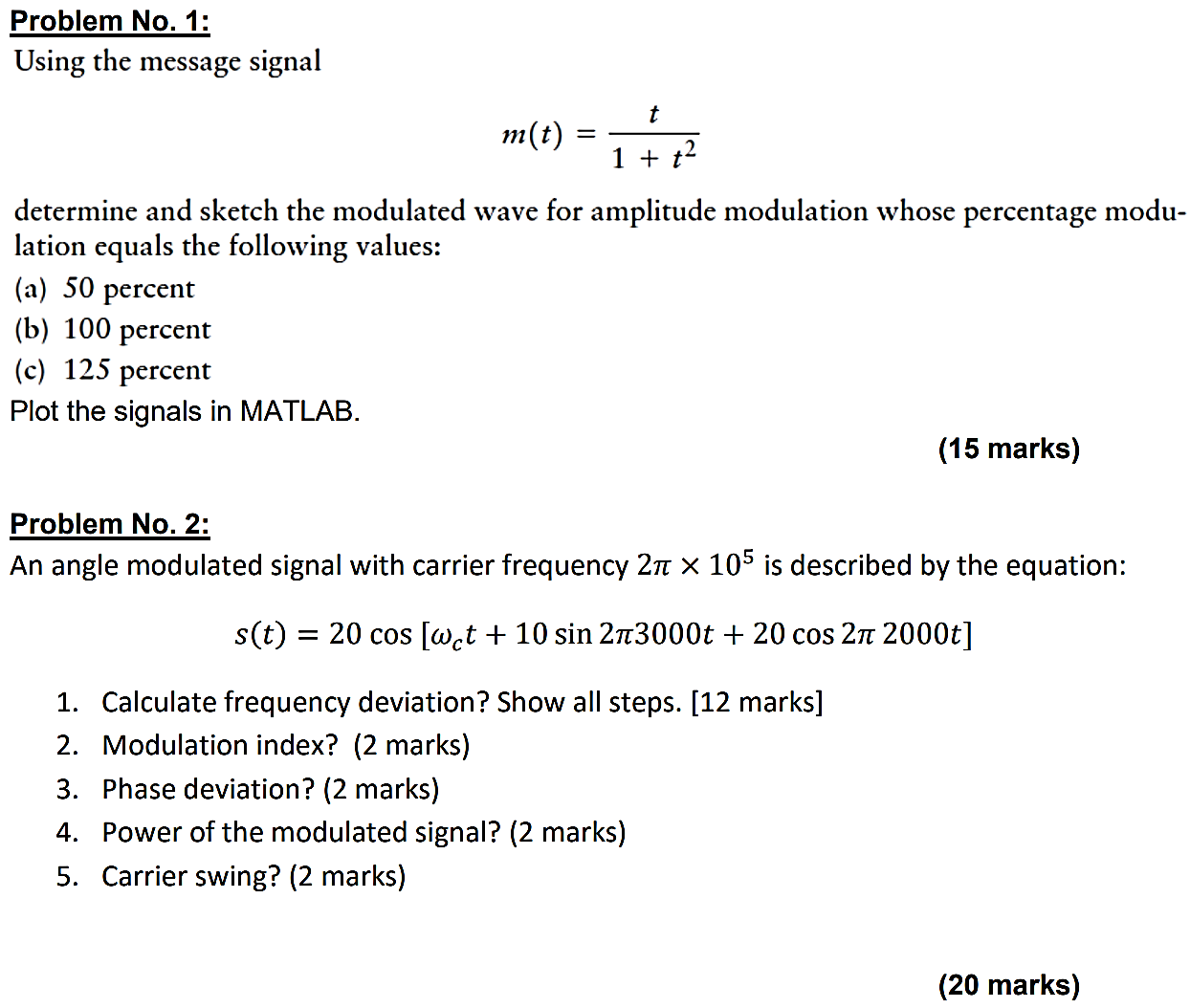
**Group Members**

|  |  |
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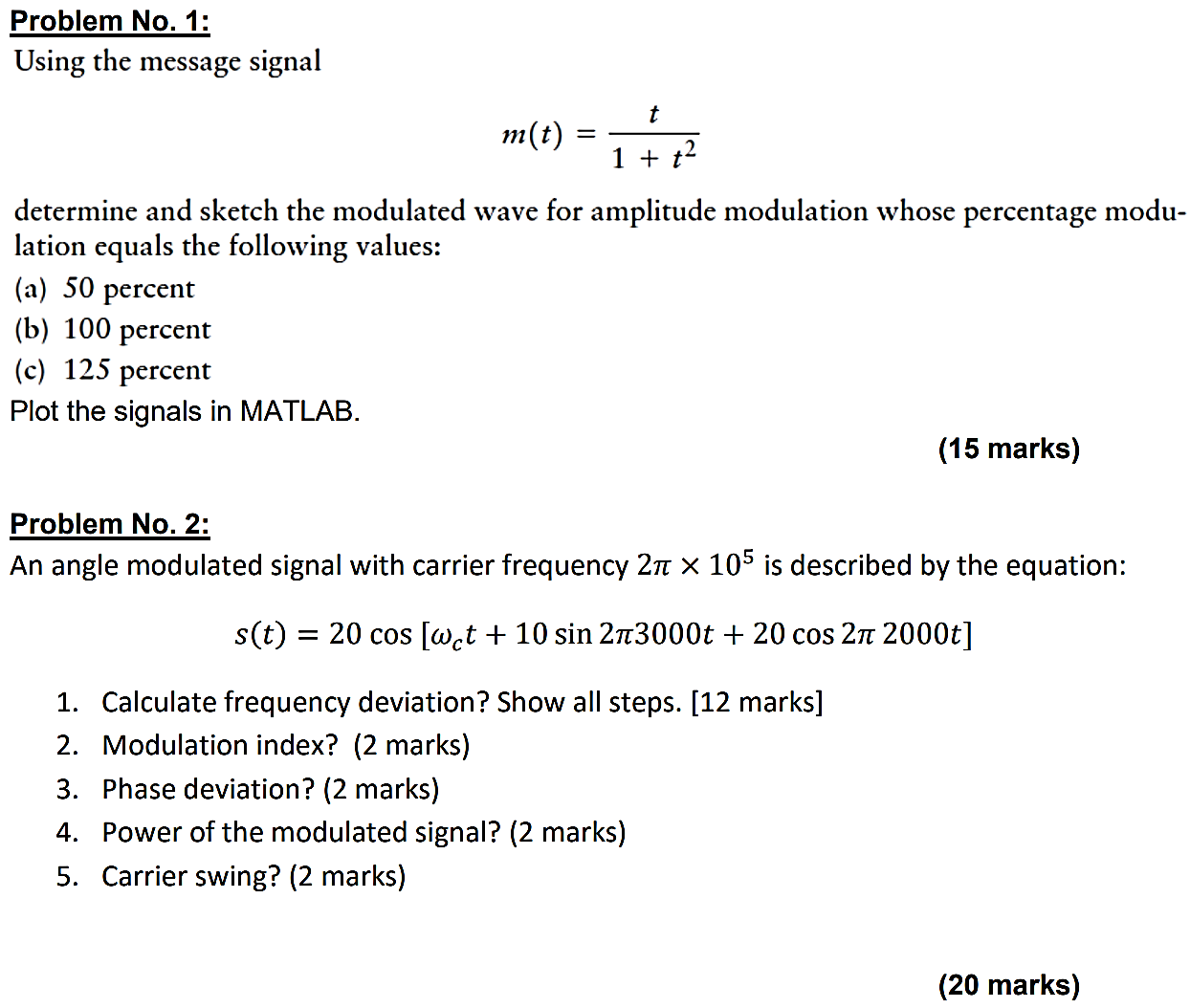
**Submission Details**

|  |  |
| --- | --- |
| 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)**

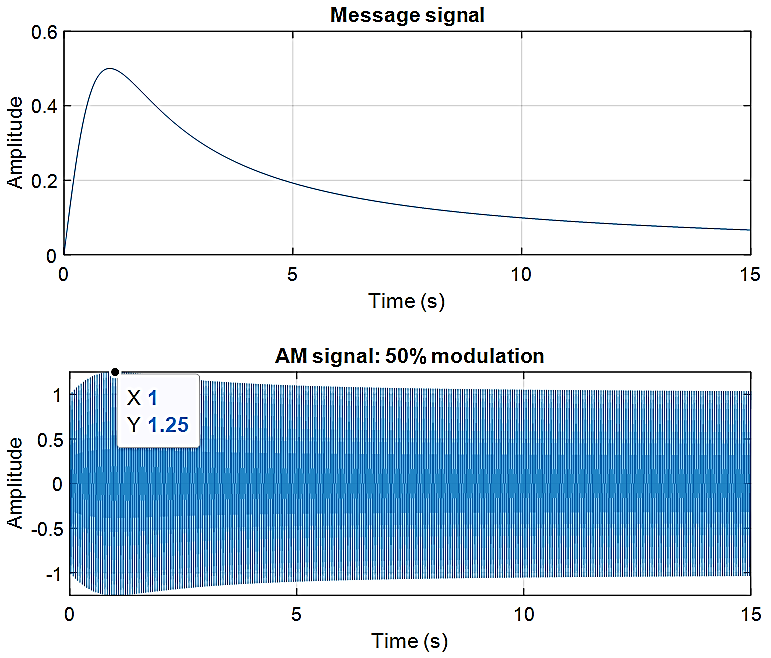
**plot(t, s\_t\_125)**

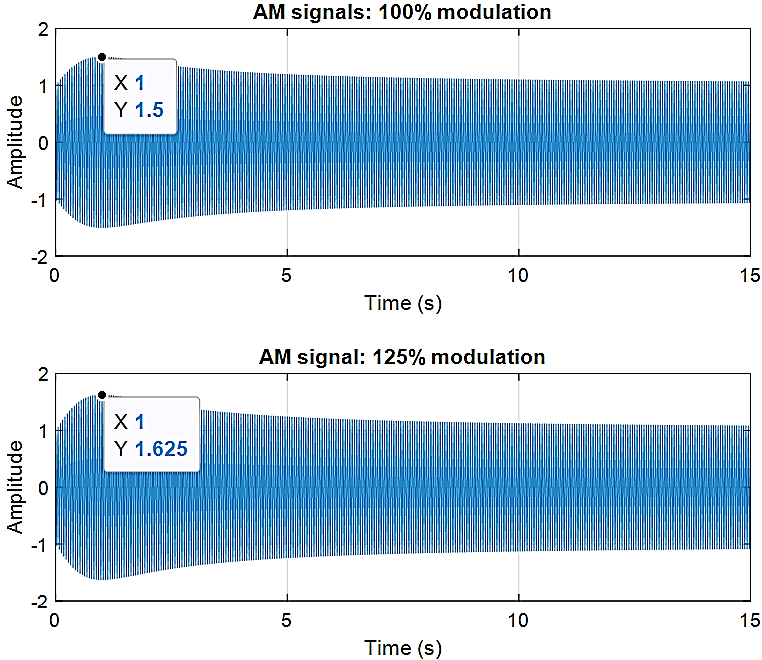
**grid**

**title('AM signal: 125% modulation')**

**xlabel('Time (s)')**

**ylabel('Amplitude')**





**Problem # 2**

Done by hand on appended pages.