

Name.....Student I.D.....

**Department of Mining and Materials Engineering**  
**Faculty of Engineering**  
**Prince of Songkla University**

Mid-term Exam for Semester: 1 Academic Year: 2007

Date: July 30, 2007 Time: 9.00-12.00

Subject: 237-405 Materials and Process Selection Room: A301

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Instructions

1. There are 3 problem sets. Please do all of them and write your answers in the space provided after each problem set.
2. Textbooks and course notes are not allowed.
3. Dictionary and calculator are allowed.
4. This mid-term exam is accounted for 25 % of total grade.

Asst. Prof. Dr. Thawatchai Plookphol

Problem No.	Full Score (points)	Student's Score (points)
1.	20	
2.	40	
3.	10	
<b>Total</b>	<b>70</b>	





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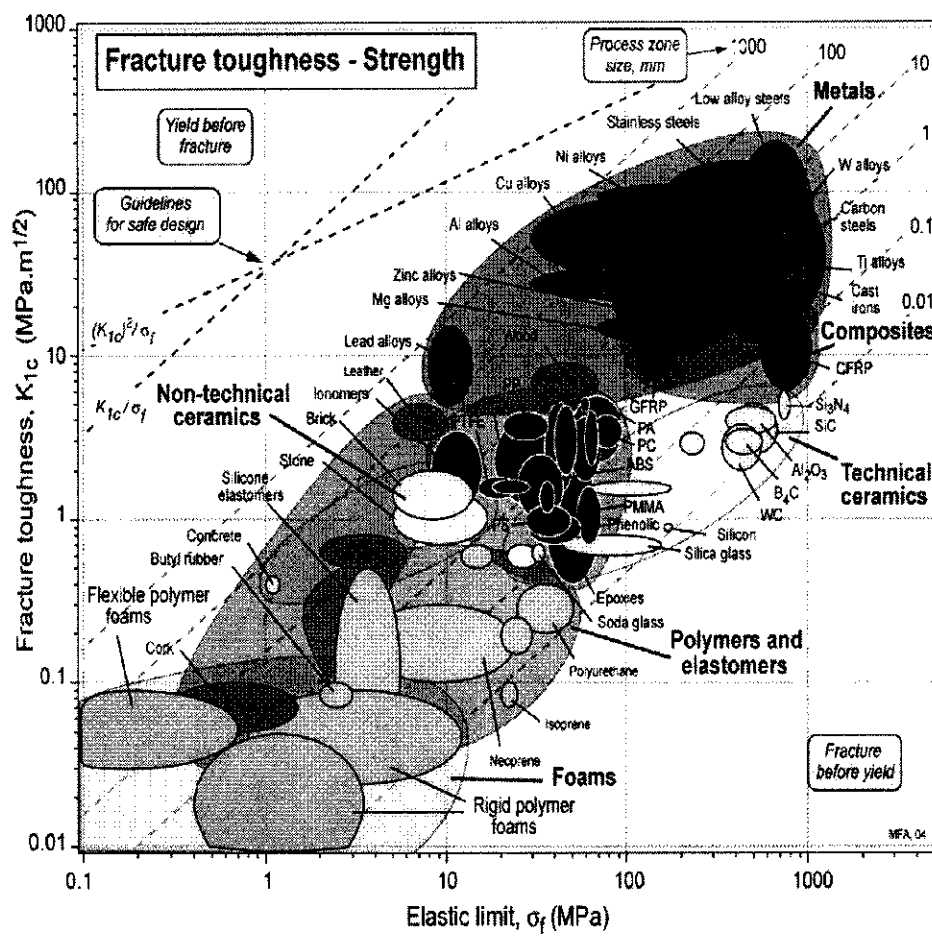
**Problem 3**

Use the fracture toughness - strength chart below to identify alloys for making a pressure vessel with material performance index

$$M = \frac{(K_{Ic})^2}{\sigma_f}$$

3.1 Draw a selection line with a particularly high value of  $M$  on the chart. Please show how to get the selection line and what is slope value of the line? (7 points)

3.2 Identify three alloys which have the same performance. (3 points)



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