



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

**Problem 1** Explain the following terms:

1.1 Conceptual design (5 points)

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1.2 Embodiment design (5 points)

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1.3 Detail design (5 points)

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1.4 Material performance index or material index (5 points)

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**Problem 3** (15 points)

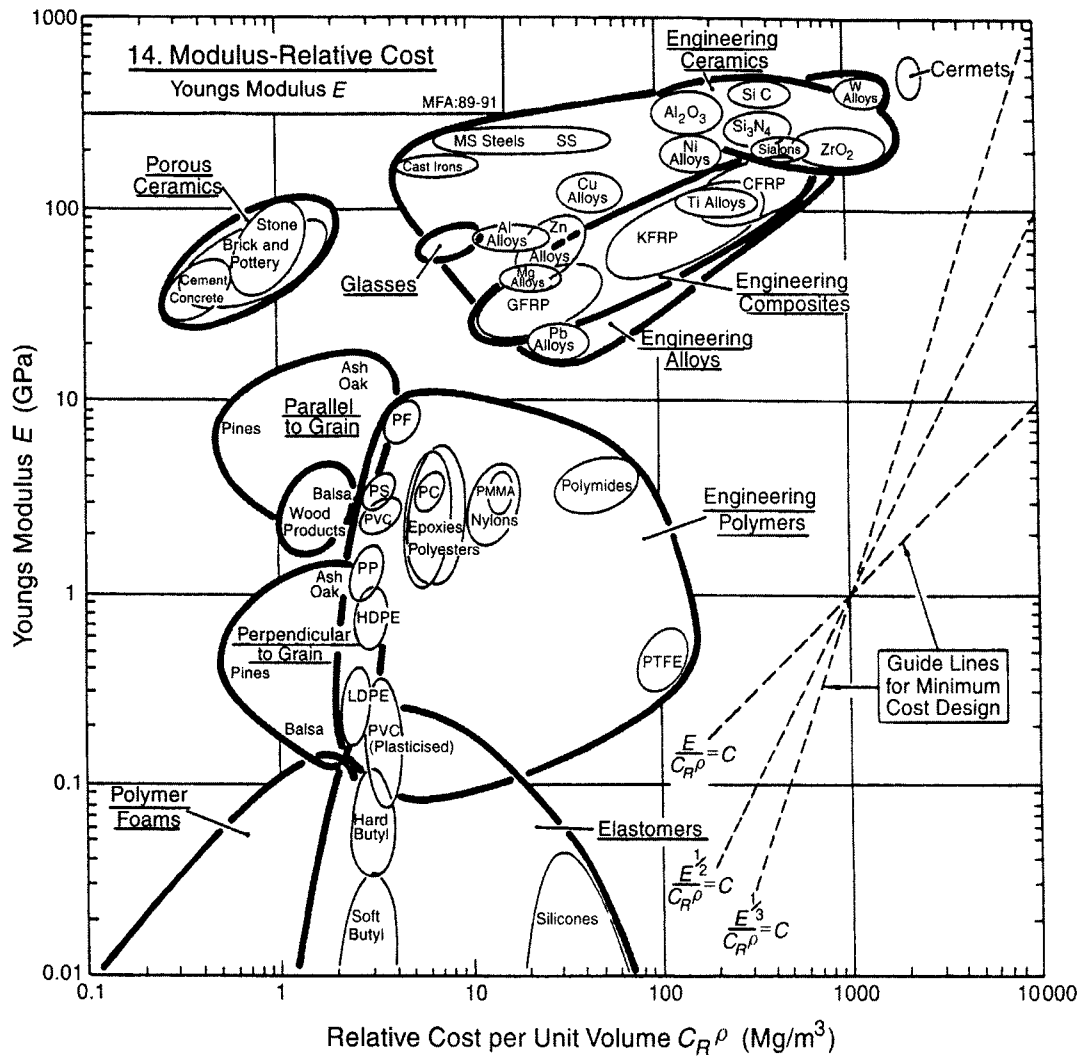
Use the Young's modulus-relative cost chart to identify material with

$$M_1 = E > 100 \text{ GPa}$$

$$M_2 = \frac{E}{C_R \rho} = 10 \frac{\text{GPa}}{\text{Mg/m}^3}$$

3.1 Draw the selection lines  $M_1$  and  $M_2$  (10 points)

3.2 Identify the material (5 points)



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