
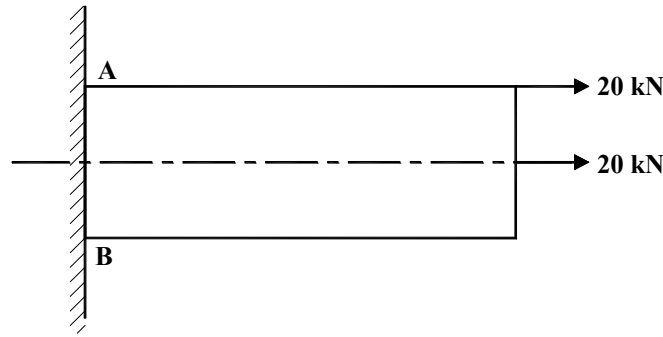


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|  | <b>Alexandria Higher Institute of Engineering &amp; Technology (AIET)</b> |                              |                       |
|                                                                                   | Industrial Department                                                     |                              | First Year            |
|                                                                                   | EME142                                                                    | Design of Machine elements   | Midterm, May, 3, 2011 |
|                                                                                   | Examiners:                                                                | Dr. Rola Afify and committee | Time: 1.5 hour        |

**Answer the following questions:**

**Question one (10 marks)**

- a) What are the mechanical properties of Metals?
- b) A 30 mm diameter rod, shown in figure, is subjected to two forces of 20 kN each.  
Calculate the stresses at A and B.



**Question two (10 marks)**

- a) Name the types of simple stresses each one with its equation.
- b) Draw, using neat sketches, the following:
- Elevation and Plan of a cap screw with Filister head.
  - Elevation and Plan of a cap screw with Flat head.
  - Elevation of a set screw with Headless head with Flat point.

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Good Luck