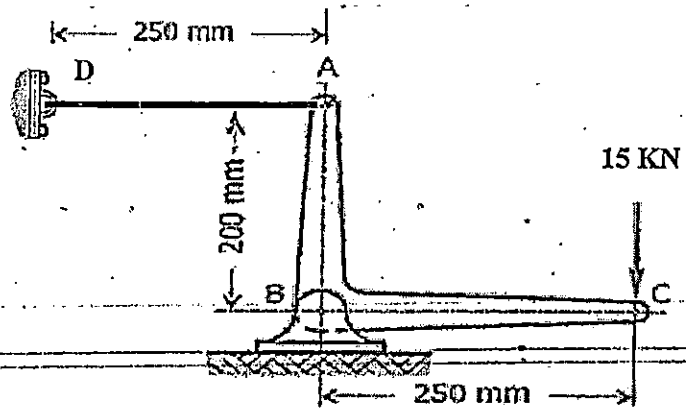
الاسم:.....	المجموعة: (...)	الفصل: (...)	الدرجة: (.....)

Mid-Term Exam

Question 1: **[10 Marks]**

The Rod *DA* is made of aluminum ($\alpha = 23\times10^{-6}/^{o}C$, and $E=70\ GPa$) and is 20 mm diameter. The *L* shape member *ABC* is rigid and *BC* was originally horizontal. For the loading shown in the figure, determine:

(a) The stress in the rod *DA*.
(b) The vertical downward movement of point *C*.
(c) The temperature drop that will bring point *C* back to its original position.



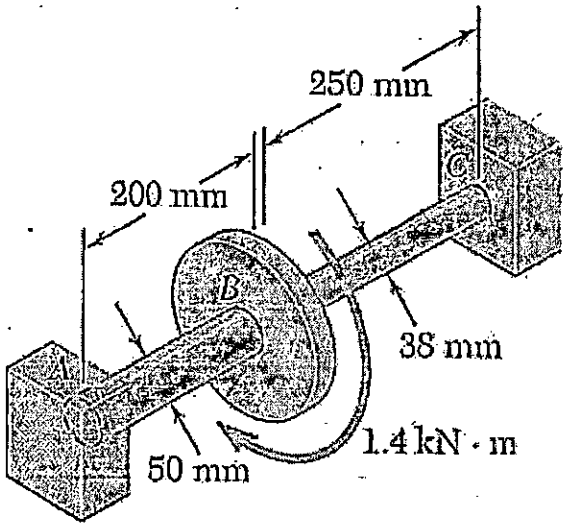
Question 2: **[10 Marks]**

Two solid steel shafts ($G = 77\ GPa$) are connected to a disc B and to fixed supports at A and C. For the loading shown, determine:

(a) The reaction at each support,

(b) The maximum shearing stress in shaft AB, and

(c) The maximum shearing stress in shaft BC.



Best Wishes
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Dr. Ibrahim Nabil Eldesouky