Comments on quiz 1

1. Problem 1 (7 pts). It is very similar to one of the homework problems, so most student did it correctly. Common Mistakes:

① You should have a diagram which shows the relationship between the two tensions and their net force (see the requirement in an email from Prof. Ruina). 0.5 pt is taken off for not drawing the diagram even though everything else is correct.

② Quite a few students got the angles wrong. Pure algebraic mistakes only cost 1 ~ 2 pts.

③ You should have the equation $\underline{T}_{AB} + \underline{T}_{AC} = -125\,N\,\underline{j}$ or equations equivalent to this one to get points for this problem.

④ small mistakes like units, notations also cost 0.5 ~ 1 pt.

2. Problem 2 (10 pts): The underneath concepts of this problem are actually very easy even though it looks different from all the problems we've done. It's very good that a lot of students got the concepts. Common Mistakes:

① You should have two equations $\Sigma \underline{M}_{/B} = \underline{r}_{A/B} \times \underline{F}_1 + \underline{r}_{D/B} \times \underline{F}_2$,

$\Sigma \underline{M}_{/C} = \underline{r}_{A/C} \times \underline{F}_1 + \underline{r}_{D/C} \times \underline{F}_2$ or equations equivalent to these two, i.e. you should have the equations from which the correct answer can be obtained if the numbers are substituted into them. Otherwise, you can't get points for this problem.

② Quite a few students used $\underline{M} = \underline{F} \times \underline{r}$ instead of $\underline{r} \times \underline{F}$. 3 pts are taken off for this mistake.

③ Some students set up correct equation, but they used $\underline{r}_{D/B} = \underline{r}_{D/C}$, and thus the answer is wrong. 2 pts for this mistake.

④ Algebraic mistakes like sign, angles, etc cost 1 ~ 2 pts.

⑤ Forgot the units in the answer. e.g. $\underline{F}_C = -9\,\underline{i}\,(N) + (-12)\,\underline{j}\,(N)$, $y = 3\,(m)$ — 0.5 pt for this.