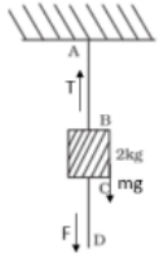


QUES 04

A mass of 2kg is suspended with thread AB (Fig.). Thread CD of the same type is attached to the other end of 2 kg mass. Lower thread is pulled gradually, harder and harder in the downward direction so as to apply force on AB. Which of the threads will break and why?



Sol. We first draw the free body diagram to see what forces are acting on the system. Here, we can see that the weight of the body is acting downwards and given by "mg". The corresponding tension on the string AB is given by "T". In addition to these forces, we apply a third force via string CD in the downward direction given by "F". So,

$$T = F + mg$$

As the tension is the greatest force, given by the sum of the weight and the additional force applied, string AB will break.