

STEP II, 2006, Q9 EC

- 9 These leaning-ladder questions are actually pretty standard, and it was disappointing to see so few attempts made at this one. More disappointing still was the lack of a decent diagram from which candidates might have been able to extract some support for their working. Similar dismay was evoked by the widespread inability, on the part of almost all candidates, to be able to say what mechanical principles they were attempting to use at any stage of their working. Of the relatively small number of attempts seen, most suffered from at least one of these deficiencies. Consequently, although there were many partially or totally successful attempts at (i), the number of even half-decent attempts at (ii) were very few. The extra forces that needed to be considered in (ii) were either overlooked completely, or were missing from (i)'s diagram that candidates were trying to re-use.

The other painfully obvious shortfall here lay in candidates' dislike of using the *Friction Law* in its more general, inequality, statement rather than in the equality case given by limiting equilibrium. Such a shortfall was overlooked, even when it wasn't explained correctly (although it contributed substantially to problems in part (ii), when working was to

be found). Those making a stab at (i) usually managed to make correct statements from resolving and taking moments, although arguments putting everything together and explaining why the ladder was stable were often less than entirely satisfactory.



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