STEP – Using an earlier part of the question

(3 pages; 20/6/25)

(1) In order to home in on the correct approach for a particular part of a question, it is usually safe to assume that the solution to an earlier part (often the immediately preceding part) of the question is to be employed in some way.

For simplicity, I shall just refer to 'the 1st part' and '2nd part' of the question.

(2) Often the 1st part is a fairly simple algebraic task. If this task is clearly simple, then it is a foregone conclusion that it has only been included in order to help with the 2nd part. Conversely, if the task looks as though it might be intended to help with the the 2nd part, then we can expect the solution of the task to be fairly simple.

(3) The 1st part may require a result to be proved, and this result may then be needed in order to complete the 2nd part. In this case though, the candidate often has to find their own way of tackling the 2nd part, but the established result turns out to be of use in the proof.

(4) Sometimes the **method** used in the 1st part is to be applied in the 2nd part; perhaps in a more complicated situation. For example, a substitution may be indicated for the 1st part of an integration question, but not the 2nd.

It is tempting to assume that using the same substitution for the 2nd part would be 'too obvious', but in fact doing something simple or obvious is quite common in STEP questions.

(5) Where the same method is intended by the question-setter to be applied in the 2nd part, there is always the risk that the candidate may have used a method of their own to tackle the 1st part, and this alternative method may not be capable of extension to the more complicated case. This hazard can sometimes be avoided by reading the whole of the question first.

(6) The 2nd part may sometimes require a modification of the method used in the 1st part. This could be a different substitution, in the case of an integration. Or, if a single application of Integration by Parts is required for the 1st part, then a double application might be needed for the 2nd part.

(7) Sometimes the required modification can be predicted. For example, if the 1st part involves use of the Binomial theorem applied to $(1 + x)^r$, it might be the case that the 2nd part involves replacing x with $2x$; whilst the 3rd part could involve replacing x with $-x$.

(8) A rearrangement of an expression or equation in the 2nd part may be needed before the result or method of the 1st part can be applied.

(9) Even if the question setter intended an earlier result or method to be used, it may not be obvious how to do this, and instead it may be easier to tackle the problem independently. (Provided, of course, that the question doesn't say 'Hence …'.)
Sometimes it is best to tackle the problem independently, and allow the earlier result or method to emerge naturally.