

# Exams – your questions answered



## 1. What is the difference between the CM and A-M examinations?

The main differences are:

a) The level of competence required of CM candidates is higher than that required of A-M candidates. As a result, the degree of challenge posed by the examiners in the CM questions is higher than that in the A-M questions.

Candidates for the CM examination will be required to have a broader knowledge and deeper understanding of the factors influencing design such as varying ground conditions, more challenging site constraints, greater threats to the durability of construction, etc. They must also be capable of developing more innovative solutions that are required to meet a greater technical challenge.

b) The difference in competence levels referred to in a) above, is also reflected in the expectations of the marking examiners. Examiners marking CM papers will expect a higher quality answer than those marking A-M answers.

c) CM candidates are required to produce two distinct and viable solutions to the problem defined in the question.

A-M candidates are only required to produce one viable solution for a less challenging problem.

d) There is more emphasis on conceptual design in the CM examination (50%) compared with the A-M examination (35%).

Further information concerning the CM and A-M examinations can be found in the 21 January 2003 issue of *The Structural Engineer* and in the annual Examiner's Reports.

## 2. In Section 1a) of the A-M and CM examination papers, what is meant by a 'viable' solution?

A viable solution must satisfy all the client's requirements (as stated in the question) and the general requirements of any structural design, namely: economy; ease of construction; stability; robustness; safety; serviceability and fitness for

A call for questions concerning the Institution's examinations was made in the 19 July and 2 August 2005 issues of *The Structural Engineer*. Several questions were raised; here is the response from the Institution's Examinations Panel

purpose.

## 3. How 'distinct' is distinct?

The key to providing distinct solutions is to ask the question – what are the differences between my solutions in terms of their structural action and form and load transfer? Hence simply offering two identical structural layouts, one in steel and the other in concrete, generally will not be sufficiently distinct because no account has been taken of the essential differences between the two materials and ensuring the capability of each is being used to best advantage.

If two different structural layouts were proposed, one in steel and one in concrete, which took into account the capacity of steel to span greater distances within the same construction depth, these might well be sufficiently distinct. Similarly, offering a reinforced concrete slab and beam solution compared to a prestressed concrete flat slab might be sufficiently distinct (depending on the question) provided that the capabilities of the two structural systems had been satisfactorily exploited.

## 4. Is there a standard marking sheet where marks are given or lost for certain elements?

There are no standard marking sheets and candidates will not normally pass or fail the exam simply by including or omitting a particular item, although they will fail if they propose a structure which is unstable or if they grossly disregard the client's requirements described in the question.

Candidates will lose marks if they do not address each part of the question (for example: calculations, drawings) and the marks they are awarded will depend on the quality of their work in each case.

Each candidate's paper is marked independently by two marking examiners who are both experienced chartered engineers and who use their own professional judgment to

assess the quality of a candidate's paper. Although they are given guidance on the chief examiner's expectations for a successful script, they are not required to follow a rigid marking schedule.

## 5. What constitutes 'unfair means' in the examination?

Unfair means refers to any candidate who (during the examination) contacts or attempts to contact another party with a view to seeking help with the examination or trying to gain an advantage or trying to give an advantage to a colleague who because of the time difference may not have yet started the examination.

The Institution takes such acts very seriously. The candidate's action will be reported to the Institution's Professional Conducts Committee which may decide to revoke the candidate's membership and bar the candidate from ever seeking reinstatement.

## 6. In the CM examination, how many typical details are now required for Part 2d?

This was one of the significant changes that were introduced when the new CM examination was introduced. It is not 'typical' details that are required; it is 'critical' details. This tests the candidate's ability to recognise which details are critical to their chosen design and to proposed solutions that can be defended. The number of these details is decided by the candidate and may be only one but will probably be more.

## 7. Do you need to do elevations: will you be marked down badly for not doing elevations (as opposed to sections)?

You are asked to prepare elevations – so the short answer is yes. As to how many marks you lose if you do not provide an elevation – this will depend on how well you have communicated your design through

your remaining drawings and sketches.

## 8. How much detail do you need to go into for any calculations in Section 1a and 2c respectively?

In Section 1a sufficient calculations need to be presented to substantiate the viability of the solutions. These will probably concentrate on structural idealisation and general analysis.

In Section 2c, sufficient calculations should be presented to substantiate the viability of the principal structural elements (including foundations) and overall stability. These will probably concentrate on details analysis and design using codes.

## 9. If I have a disability which I think will affect my performance in the examination what should I do?

The Institution follows the Code of Practice for Trade Organisations and Qualifications Bodies in relation to the UK Disability Discrimination Act 1995, published by the Disability Rights Commission. The Institution acknowledges its duty to make reasonable adjustments to avoid discriminating against disabled people. Accordingly:

a) Disabled candidates applying to take the examination are asked to declare their disability and state its nature when they complete their examination application form.

b) A candidate declaring a disability is required to produce confirmation from their medical practitioner that their impairment meets the definition of disability in the DDA 1995 Act and that it is substantial (that is, more than minor or trivial), and adverse, and long term (that is, it has lasted or is likely to last for at least a year or for the rest of the life of the person affected).

c) Medical practitioners are asked to give their opinion as to the effects of the disability on the candidate in relation to sitting the examination and to specify any way in which the Institution should consider making a reasonable adjustment to its processes to avoid placing the disabled candidate at a substantial disadvantage compared to non-disabled candidates.

The Institution will consider the response received from a candidate's medical practitioner and will aim to accommodate the candidate so that they are not disadvantaged by their disability.