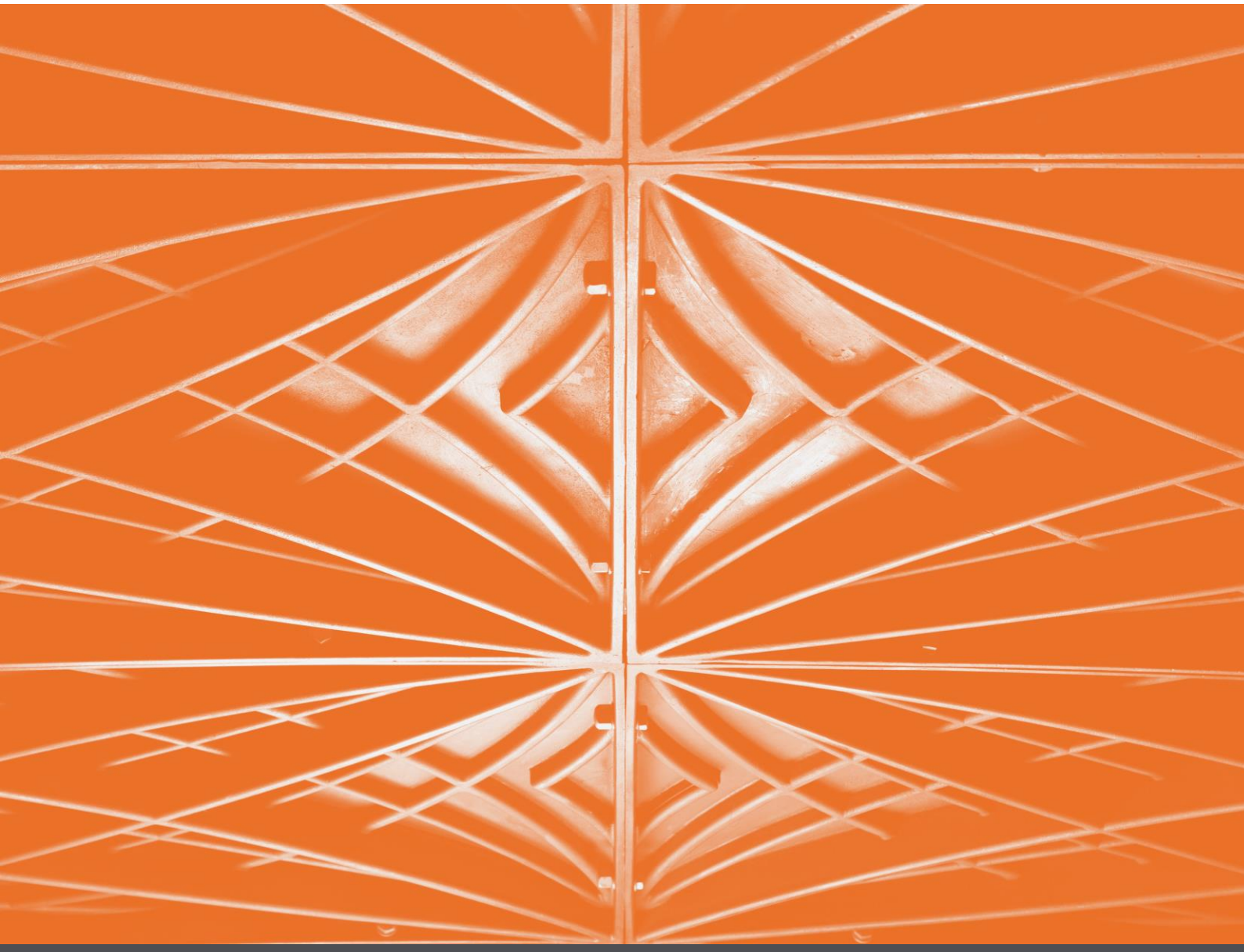
The Institution of Structural Engineers

Exam guidance and instructions

Incorporated-Membership Exams

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Important notice

From January 2024 onwards, the Institution has altered the exam content to include elements of sustainability as a key feature to all questions. Candidates should only be referring to the documents that relate to the new exam content, which will all include '2024' in the version number.

Instructions for exam candidates

Before entering the examination, please note the following:

- **Closing date for exam entry**
  The online exam booking and payment of the entry fee must be received before the listed closing date. Exam bookings attempted after this date will not be accepted.
- **Candidate number and examination venue information**
  Your candidate number and venue details can be found in your online account under 'My Exams'. You will also receive a final confirmation email two weeks before the exam.
- **Withdrawal and deferment**
  A refund or deferment of the examination fee will only be guaranteed if notification of withdrawal/deferment is made 28 days prior to the examination. In the event of exceptional circumstances occurring immediately before the examination e.g., serious illness, family bereavement etc. where candidates feel their performance will be adversely affected, the Institution will consider deferring exam entry subject to provision of supporting documentation (e.g., doctor's note dated within three working days of the exam) and an administration charge.

  If a deferment is agreed by the Institution, the candidate must sit the next available exam. Candidates may not defer more than once, otherwise the examination fee will be forfeited.

  You are advised to contact the Institution's Examination and PRI Manager, and each case will be considered on an individual basis.

  If you become ill during the exam please notify an invigilator, who will report this to us. After the exam, please provide a doctor's note dated within three working days of the date of the exam to the Examination and PRI Manager.

  Any other candidate sitting the exam will be assumed to be in good health and an appeal will not be accepted for a subsequent declaration of illness.
- **Exam centre transfer**
  It is not possible to change exam centre after the payment deadline.
- **Candidates requesting reasonable adjustments**
  If you have a disability that may affect your performance in the exam please notify us during the application process. You should provide a note from a medical professional confirming the nature of the disability (e.g. results from a dyslexia test) and where possible advice on any reasonable adjustments that should be made. This must be completed using the Candidate Disability Notification form. You are welcome to submit material from your employer or university which may assist in making an informed decision on the adjustments to be made. Any information provided will be treated as confidential.
- **Use of electronic equipment**
  Most electronic devices are prohibited in the exam – the exception is for battery operated calculators (these may be programmable) providing they are not Wi-Fi capable. Prohibited devices include but are not limited to:
  - Mobile phones
  - Laptops, notebooks or portable computers and similar devices
  - iPads, tablets, and similar devices
  - E-readers (e.g., Kindle) and similar devices
  - Cameras, optical scanners, and similar devices

- Drawing/tracing light boxes
- Smart watches

- **Clocks**
  The institution will try to ensure that there is a visible clock in all exam centres, however it is recommended that you bring a watch with you to the examination in case the clock provided is not in clear sight.

- **Exam centre selection**
  Exam centres that have already been booked can be selected via the dropdown box on the application website. If there is no centre available near you, the Institution will aim to set one up in any large town or city near you. Please contact the exams team as soon as possible with your location request.

- **Exam preparation**
  You are strongly advised to thoroughly prepare for the examination by either taking a preparation course or by practising with past exam papers. Many Regional Groups run preparation courses during the year that are worth attending.

  Past exam papers, reports, and candidate "top tips" can all be found on the website. Candidates are also advised to download a copy of the relevant Exam Preparation Guidance document, which has been produced by the Examinations Panel.

- **Exam results**
  Your results will be issued in My Account and will be followed by an exam result letter or email. Feedback for candidates failing the exam must be requested online. As part of the feedback provision, candidates will not under any circumstances be given access to their scripts or be able to review this with anyone from the Institution.

- **Lapsed membership**
  Exam results will not be issued to lapsed members until full payment of outstanding fees has been received.

Instructions for the day of the exam

- Proof of identity
  You must provide photographic ID to the invigilator on the day of the exam. If you do not produce ID, you will not be allowed to sit the exam.

- Candidate numbers and page numbering
  Your full candidate number should be written on the front cover of the exam answer pack, the last five digits of your candidate number should be recorded on each answer sheet e.g. 00483 (do not include the IM). A3 graph paper will be moved to the back on the pack for scanning, please number these D1, D2 etc. so that the whole answer pack remains in order. **You must only use the answer sheets and graph paper provided; answers submitted on any other material will be ignored by the examiners.**

  Candidates should not use their institution membership number or name anywhere on the script.

- Lunch arrangements and refreshments
  You must bring your own lunch and refreshments. You are not permitted to leave the exam venue or have access to your mobile phone or other electronic devices during the lunch break. You may not have access to any documents (including your own reference materials) during the lunch break – your script should be turned over.

- Timetable for the day

09:15	15 minutes reading time
09:30	Exam begins
13:00	Break for lunch (30 minutes) – candidates sitting Specialist Diplomas and the IM to CM Supplementary exam leave at this time.
13:30	Exam resumes
17:00	Exam ends – please be mindful of candidates who have been granted extra time

  Candidates arriving after 09:15am will still be granted access to the exam room but will receive no extra time. Candidates will not be permitted to enter the examination room after 10:30am.

- Open book policy
  The exams are “open book”, so you are permitted to take reference books and/or a folder with notes and references into the exam with you.

- Mobile phones
  Candidates bringing their phone to the exam hall will need to ensure that it is handed in to an invigilator and that it is switched off. If you are found using a mobile phone at any time during the exam, including lunch time, the matter will be reported to the Examinations Panel with the recommendation that you are disqualified from the exam.

  The invigilator may provide you with a label for ease of identification and distribution after the exam. You should write your name, candidate number, and Hong Kong identity card number (if applicable) on this label.

- Codes of practice
  Any design code or standard may be used to answer the questions in the paper, as long as reference to that code is consistent throughout and any assumptions or design data adopted (including loadings other than those specified in the question) are stated at the beginning of the answer. You must state which codes and standards you are using at the start of the paper.

- Reading time
  You should not make any marks on the paper during reading time, this includes marks on the question paper.
- Retention of exam papers
  To maintain the security of the exams you may not take the question paper away with you. The question paper will be uploaded to the website once all scripts have been received by IStructE HQ.
- Previously prepared information
  You may not include any previously prepared calculations, notes, drawings etc. Any previously prepared information submitted will be ignored by the examiners.
- Using pencils/colour in the answer scripts
  You may write in pencil and use colour throughout your answer pack, provided these are dark enough to be scanned (it is advisable to scan a sample page before attending the exam to ensure pencils/colours are clear enough for the markers to read).
- Extenuating circumstances
  All extenuating circumstances that occur immediately before or during the exam, that are not covered in the 'Withdrawal and deferment' section, must be reported to the Examination and PRI Team within three working days of the exam. Appeals will not be accepted for a subsequent declaration of extenuating circumstances.

Any queries regarding the exam should be sent to the Examination and PRI team – exams@istructe.org

Guidance for Incorporated-Membership exam candidates

The following short guide has been compiled to clarify the requirements of each section of the Incorporated-Membership examination and to help candidates to understand what issues examiners are expecting candidates to address in their answers and to what level of detail. These notes are merely a brief overview and more detailed information can be found in 'Exam Preparation Guidance'. It is also recommended that candidates attend an exam preparation course for a more in-depth brief wherever possible.

Section 1a

Section 1a asks candidates to prepare *'a distinct, viable and sustainable solution for the proposed structure'* and then to justify the reasons for your solution.

For the building structure questions, the chosen scheme should include the functional framing, basic grid layout, load paths, foundations, and stability provision etc. For the bridge question, the chosen scheme should include the bridge structure with the proposed spans, abutments, load paths to the foundations and the foundations.

Sketches may be used alongside text to describe the proposed scheme. These may be free-hand and are not required to be to scale but they must clearly convey the design principles being proposed. Calculations are not expected in this part of the question and members may be sized using engineering judgement or rule of thumb, e.g., span to depth ratio.

Structural stability is a fundamental aspect of the scheme designs, and an unsafe structure, or instances where stability is ignored, will result in an automatic fail.

Candidates should demonstrate approaches in their design which minimise the use of material through structural efficiency. Candidates should consider which materials are most likely to be appropriate for the brief, however this would not need to extend to undertaking carbon comparisons at this stage. Where a reuse opportunity is provided in the question it is expected that candidates will take advantage of this in their scheme and include the benefits in identifying the most suitable solution.

The examiner is looking for candidates to identify and address the main structural challenges in the question and marks will not be awarded for generic answers.

Section 1b

This section of the question asks candidates to suggest amendments to the brief in order to reduce material usage. Most questions will specify a design constraint from the original brief that must be maintained, and the candidate is required to respect this. Candidates are expected to critically evaluate the brief and propose amendments to the layout rather than fundamentally changing the function of the structure. The candidate should be capable of explaining the impact of their proposals on its operation and on the rest of the design. Whilst clarity is important, the examiner will focus more on candidates' grasp of the technical issues than on the quality of their written English. The professional communication can be written in either a letter or email format. Candidates may reference sketches if they wish.

Section 2c

The question asks the candidate to *'prepare sufficient design calculations to establish the form, size and approximate A1-A3 carbon footprints of all the principal structural elements including the foundations'*. This requires candidates to decide which members are 'principal structural elements' and as such requires the preparation of full scheme design calculations.

The question states that candidates must 'establish the form and size' of the element, therefore they are expected to use their judgement and experience to decide on the extent of the design checks required for each

individual element. For most members, checks of bending and shear alongside a span/depth deflection check will be adequate; however, candidates will gain extra marks for recognizing when additional checks are appropriate; for example, web buckling of a steel beam under a concentrated load. The design calculations can be prepared in accordance with any current recognised national code of practice of the candidate's choosing. The use of design guides is not considered appropriate for the design of principal elements; however, they may be used to estimate other member sizes for Part 2d (see below). Candidates should assess and check worst case load combinations. There is no requirement to include multiple load cases and repetitive and simple calculations are not required.

The approximate A1-A3 carbon footprints for key elements can be assessed using a straightforward calculation of the element volume multiplied by the embodied carbon factor (ECF) of the material. Candidates can refer to the Institution's 'How to Calculate Embodied Carbon' document for suitable methodology and ECF values. Industry average ECF values are recommended, but other suitable values can be used. Candidates are encouraged to take advantage of the Institution's free on-line embodied carbon basics course in preparation.

All calculations should be clear and easy to follow.

The principal structural elements will vary depending on the chosen scheme, but as a guide the following gives an indication of the likely elements.

For building structures:

- Main members in trusses, portal frames, arches etc.
- Transition members / transfer structures, members with high point loads
- Cantilever members.
- Vertical structures where there is a high concentration of load and/or significant out of balance moments.
- Members of stability systems.
- Foundations including piles and pile caps, reinforced rafts and pads, balancing beams within the foundation system.
- Retaining walls
- Any special structural elements unique to the scheme.

For bridge structures:

- Bridge deck
- Main deck support structure
- Vertical structure
- Stability system
- Foundations including piles and pile caps, reinforced pads etc.

Clearly most schemes will not include all of the above and, as a guide, candidates would be expected to design between five and seven elements depending on the question.

Section 2d

This part of the question requires candidates to prepare drawings and predefined critical details. Drawings do not need to be to scale but should generally be in proportion and should be dimensioned. The drawings should include appropriate plans and sections including foundations. Elevations would usually be expected for bridges and should be included for building structures if they are considered necessary to convey the scheme. It may be appropriate to draw part plans where the structure is symmetrical, or to draw a single plan to represent a number of identical floors in a building. Members that are not considered principal structural elements by the candidate can be sized for estimating purposes using engineering judgement, span/depth ratios, or design guides such as 'Tata Steel Blue Book', 'Concrete Centre Design Guides'. The candidate should develop, prior to the examination, knowledge and experience of methods of element sizing by approximation and by the use of established design guides.

Section 2e

This requires the preparation of a construction method statement, and the examiner is looking for candidates to demonstrate a degree of practical knowledge. The answer should be tailored to the candidate's proposed scheme and should not be a generic response.

The method statement must include all activities required to build the proposed structure, including addressing health and safety issues, and should reflect the proposed scheme design. The statement should be kept brief with simple descriptions of each activity.

Professional Review Rules

The Professional Review is a two-stage process, comprising the Professional Review Interview (PRI) and the membership exam. It is designed to ensure that candidates have the required knowledge, skills and abilities to satisfy both the Institution's and Engineering Council's competence and commitment standards.

The Engineering Council requires candidates to satisfy their academic requirements and pass a PRI in order to be eligible for CEng or IEng registration. The Institution additionally requires candidates to pass the CM or IM Exam in order to be elected as a Member (MIStructE) or Incorporated-Member (IMIStructE) respectively.

Candidates who satisfy the academic requirement for the Associate grade of membership will be elected to Associate AIStructE CEng upon passing the Chartered Member PRI, and the following exam rules will not apply.

The Engineering Council normally requires candidates to register with them within three years of completing the PRI. This ensures that the candidate has demonstrated current competence and commitment. Occasionally a candidate may take slightly longer to pass the exam, and this has been recognised by the Engineering Council. However, candidates cannot have an unlimited amount of time to pass the exam before their PRI result becomes time expired. The Institution and Engineering Council have agreed the rules below to ensure that candidates attempting to pass the exam and subsequently register as CEng or IEng are not unreasonably disadvantaged. Candidates who fall foul of either rule will be required to re-sit the PRI upon passing the IM or CM Exam.

You may sit either the PRI or the exam first but should bear in mind the following rules. Please note that these rules are only applicable to those candidates who have passed their PRI and have yet to pass the exam.

1. Three-year interview rule
   If a candidate postpones taking the examination for three consecutive years after the completion of the interview, they will still be allowed to sit the examination. However, this is on condition that in the event the candidate passes the exam they will be required to apply for a full PRI. If successful in this interview, candidates will then be eligible to be elected as a Chartered Member/Incorporated-Member.

   Example: Candidate X has sat and passed their Professional Review Interview in December 2022. They must attempt their first exam before the end of 2025 to not fall foul of this rule. If they do not sit their first exam until January 2026, they will be subject to re-applying for the PRI upon passing the exam.

2. Five-year examination rule
   Candidates must pass the examination within five years of the completion of the interview. Candidates taking longer than five years to pass the exam will still be allowed to sit the examination. However, this is on condition that in the event the candidate passes the exam they will be required to apply for a full PRI. If successful in this interview candidates will then be eligible to be elected as a Chartered Member/Incorporated-Member. Note that candidates may not leave a gap of longer than three years between exam attempts and must satisfy the Three-year interview rule.

   Example: Candidate Y has sat and passed their Professional Review Interview in December 2012. From the date of this interview, they must achieve an exam Pass result by the end of 2027 to not fall foul of the rule. If the exam is passed in January 2028, the candidate must re-apply for the PRI.

To check when you last sat an examination, please refer to the 'My Account' area of the IStructE website.

Any queries regarding exam eligibility should be sent to exams@istructe.org

Windspeed Conversion Chart

The following chart is to be used for IStructE exams only and is intended as a guide for candidates who are using codes which provide a 10-minute averaging period.

