

## **HKIE Structural Exam 2022 – 2023 Examiner's Report**

HKIE Structural Examination consists of two main parts, the written exam and the interview. The written exam is a 7 hours exam and has two sections, a one hour Multiple Choice (MC) section (Section 1) and a six hours Design Question (DQ) section (Section 2). The design question is further divided into section A and B. This year a supplementary exam for Section 1 MC was introduced for candidates who passed Section 2 DQ of the Written Exam but failed Section 1 MC. The arrangement thus eliminated the previous requirement of passing MC and DQ at the same sitting.

The interview part generally adopts a competence-based approach which focus on the following four pillars, applying engineering knowledge, developing technical solutions, managing engineering works and upkeeping professional acumen. The interview usually takes about an hour.

Candidates has to pass both the multiple choice and the design question section together with the interview to be considered passing the HKIE Structural Exam.

For the exam year 2022-2023, 347 number of candidates registered for the written exam of which 328 took the exam on 21 November 2022.

- 91.5% of the candidates passed the multiple choice section and 22.9% passed the design question section. The overall pass rate is 22.6%.
- One candidate has been invited to attend the supplementary Multiple Choice exam.
- Majority of candidates attempted design question 1 and 3, with lesser number of candidates attempted design question 2, 4 or 5.
- Q1 Data Centre over Vehicle Tunnel - about one quarter of the candidates provided two distinct and viable schemes and about half showed knowledgeable in wind load assessment. While some provided design to justify choice of key structural elements, most did poorly in drafting framing plans and unable to provide details on critical elements, also, most did not provide reasonable and practical project design and construction programme.
- Q2 Conversion of Factory Building to Office with Roof Top Extension – only one quarter of the candidates managed to provide two distinct and viable schemes, and gave reasonable impact assessment on the existing foundation and the building structural frame. Half of the candidates provided satisfactory design for the key elements relating to the roof extension, only a quarter provided acceptable drafting to show the structural layout relating to the extent of the Alteration and Additions works. Many did not provide satisfactory details on the interface between new and original structures, nor the method statement on demolition. Many also failed to provide construction programme highlighting protection and precautionary measures.

- Q3 Office Building with Open Sky Garden – over one third of the candidates provided two distinct and viable structural and foundation schemes, the majority also answered the wind assessment part quite satisfactorily. Many failed to provide sufficient design justification for key structural elements including transfer structures and slender columns, failed to provide clear dimensioned framing plans showing the different structural arrangement on different floors. Many did not provide foundation layout nor construction programme.
- Q4 Highway Bridge – Few candidates provided two structural and foundation schemes that satisfied key client requirements. Some provided reasonable wind load assessment. While many provided acceptable design calculation on the key structural elements, many failed to provide drafting work to show key bridge structural layout and details, method statement and construction programme.
- Q5 Grandstand with Roof – Only one candidate attempted this question. Answers to two distinct and viable structural and foundation schemes together with wind load assessment were considered satisfactory. Design calculation of the key structural elements including wind effects was provided, framing plan and details together with method statements and construction programme were also provided.

140 candidates registered for the interview between May to July 2023, 6 withdrawn. 42% passed the interview.

- Main concerns on failure include: lack of design and / or site experience, lack of in-depth knowledge of the design project(s) presented, unable to discuss alternative solutions, fail to demonstrate sound structural principles and behaviour, insufficient project management experience and knowledge on construction contracts.