

**Information Leaflet on**

**Written Examination for Candidates Applying for**

**Registration as Lift Engineers and Escalator Engineers**

**under the Lifts and Escalators Ordinance**

**(October 2021)**

**By**

**The Examination Board (Registration of Lift Engineers and Escalator Engineers)**

# **Written Examination for Candidates Applying for Registration as Lift Engineers and Escalator Engineers under the Lifts and Escalators Ordinance**

## **1.0 Preface**

- 1.1 In 1998, the Lifts and Escalators Sub-division of the Electrical and Mechanical Services Department (“EMSD”) formed the Examination Committee (Registration of Lift Engineers and Escalator Engineers) (“Examination Committee”). Under the Examination Committee, the Examination Board (Registration of Lift Engineers and Escalator Engineers) (“Examination Board”) was formed. From 1998 onwards, the Examination Board has arranged written examinations for candidates applying for registration as lift engineers and escalator engineers, to replace similar examinations which were organized by EMSD alone.
- 1.2 The Examination Committee is formed with representatives from the City University of Hong Kong, the Hong Kong Polytechnic University, the University of Hong Kong, the Lift and Escalator Contractors Association, the Registered Elevator and Escalator Contractors Association Limited, the International Association of Elevator Engineers (HK-China Branch), and EMSD.
- 1.3 The Examination Board is formed with representatives from the universities and EMSD.

## **2.0 Objectives**

The Examination serves to assess the candidate’s abilities, statutory knowledge, theoretical knowledge and technical knowledge in design, installation, commissioning, testing and maintenance works on lifts/escalators (whichever is appropriate).

## **3.0 Recognition of the Examination**

Anyone who has passed the Examination may apply within 2 years for registration as lift/escalator engineers (whichever is appropriate) if they satisfy other application requirements. They will only be registered if they also pass the interviews conducted by EMSD.

## **4.0 Structure**

Examination questions are of essay type. Candidates are allowed to bring relevant statutes, standards, Codes of Practice and circular letters into the examination hall. Any kind of “model answers” will not be allowed. The Examination will be divided into two parts - the lift part and the escalator part. Each candidate may select to take only the lift part or only the escalator part or both in one examination.

***Lift part:*** This part consists of 7 questions, of which 4 are compulsory questions. Each question carries 20 marks. Each candidate has to attempt 5 questions. The duration of this part of the examination is 3 hours from 10:00 a.m. to 1:00 p.m., and the passing mark is 50%.

***Escalator part:*** This part consists of 6 questions, of which 3 are compulsory questions. Each question carries 25 marks. Each candidate has to attempt 4 questions. The duration of this part of the examination is 2 hours from 2:30 p.m. to 4:30 p.m., and the passing mark is 50%.

## **5.0 Syllabuses and sample questions**

Please refer to Appendices A & B for the syllabuses and sample questions for the Examination.

## **6.0 Date of the Examination in 2022**

In 2022, the Examination will be held on Saturday, 12 February 2022. The morning session (10:00 a.m. to 1:00 p.m.) will be for the lift part, and the afternoon session (2:30 p.m. to 4:30 p.m.) will be for the escalator part.

## **7.0 Application procedures**

**7.1 *Entry Prerequisite*** - There is no minimum entry prerequisite. However, the application has to be signed by a proposer who should preferably be a Registered Lift/Escalator Engineer/Contractor, or the applicant’s employer.

**7.2 *Application period*** - 22 November to 20 December 2021

**7.3 Obtaining application form** - Application forms and these leaflets vide EMSD Circular Letter No. 10/2021 can be downloaded from the EMSD website:



[https://www.emsd.gov.hk/en/lifts\\_and\\_escalators\\_safety/publications/circulars/index.html](https://www.emsd.gov.hk/en/lifts_and_escalators_safety/publications/circulars/index.html) or from the website of the Hong Kong Examinations and Assessment Authority:



<https://www.hkeaa.edu.hk/en/IPE/rlereee/>

**Note:** Photocopies of application forms are acceptable.

**7.4 Submission of application form** - During the application period, candidates should submit their completed application forms by post to the following address:

- International and Professional Examinations Division, Hong Kong Examinations and Assessment Authority, 3/F, 17 Tseuk Luk Street, San Po Kong, Kowloon  
Enquiry Telephone Number: (852) 3628 8711
- Under special circumstances, the Hong Kong Examinations and Assessment Authority (HKEAA) may at its discretion admit a candidate after the closing date for entry on payment of a supplementary fee in addition to the normal examination fee. Supplementary fees paid are not refundable or transferable in any circumstances.

**7.5 Items to be included in each application** - All of the following should be mailed to the above address:

- A signed and completed application form.
- A photocopy of the candidate's Hong Kong Identity Card (for verification purposes only and will be destroyed after the application is completed).
- A stamped (postage: \$2), self-addressed envelope (maximum dimensions: 245 mm x 165 mm) for sending a demand note for payment of examination fee.

**Note:** Candidates must note that their entries will not be accepted if any of the above-mentioned documents have not been enclosed. Please ensure that sufficient postage is paid to avoid unsuccessful delivery. The candidate will bear any consequences arising from not paying sufficient postage. **The postmark date on the envelope will be regarded as the date of application.** The HKEAA cannot accept the responsibility for any delay/loss in mail service. If a demand note is not received by 24 December 2021, the candidate should contact the HKEAA by phone before 1:00pm of 28 December 2021.

**7.6 After the application** -

- Demand notes will be issued to individual candidates. Payment must be made at any 7-Eleven or Circle K convenience store in Hong Kong. Candidates should refer to the demand note for the "Payment Instructions". Entry to the examination will be invalidated if payment of examination fee is not made on or before the date stipulated on the demand note. If under special circumstances a late payment is accepted, a supplementary fee will be charged in addition to the normal examination fee. Fees paid are not refundable or transferable in any circumstances.
- Admission Forms will normally be issued to all candidates about two weeks before the examination day by the HKEAA. Candidates should check their personal particulars carefully. If any discrepancies are found, please inform the HKEAA in writing for correction. If the discrepancies are related to candidate's Chinese or English name, a copy of the identification document must be submitted (Fax No.: (852) 3628 8790; Email: ie1@hkeaa.edu.hk; Address: 3/F, 17 Tseuk Luk Street, San Po Kong, Kowloon, Hong Kong). All candidates must take their examinations on the date, time and centre specified on their Admission Forms. Candidates who have not received their Admission Forms one week before the examination or in case of loss should immediately contact the HKEAA (Tel. No.: (852) 3628 8711 / (852) 3628 8787) for a replacement.

**Note:** The acceptance of an application into the Examination is at the discretion of the Examination Board.

### **8.0 Notification of examination results**

Examination results will normally be informed to the individual candidates within 8 weeks after the examination. The examination result is in the form of “a pass” or “a fail”, with no marks or grades. Passed candidates will also receive their pass certificate(s). Candidates who have not received their results within 8 weeks immediate after the examination shall contact the Examination Board.

### **9.0 Appeals**

If a candidate is dissatisfied with the examination result, he/she may lodge an appeal to the Examination Board within 14 days from the end of the 8 weeks period or after receipt of the examination result, whichever is the earlier. Such an appeal must be made in writing to the Examination Board via the HKEAA and pay a supplementary fee for each paper applied. Please contact the HKEAA for details:

The Examination Board (Registration of Lift Engineers and Escalator Engineers)  
c/o International and Professional Examinations Division  
Hong Kong Examinations and Assessment Authority,  
3/F, 17 Tseuk Luk Street,  
San Po Kong, Kowloon  
Telephone No.: (852) 3628 8711  
Email: ie1@hkeaa.edu.hk.

Each appeal will be handled directly and carefully by the Examination Board and then the Board will inform the candidate concerned about the result of the appeal, i.e. either “the original result stands” or “the original result does not stand”. Neither details of the appeal procedure nor the marks of the candidate will be released to the candidate. That decision of the Examination Board will be final. The appeal fee paid will not be refunded if the original result stands.

### **10.0 Web site**

This information leaflet, the attached application form, any other relevant information can be found in the following web site:



<https://www.hkeaa.edu.hk/en/IPE/rleree/>

### **11.0 Data Privacy**

Personal data of candidates are used by the HKEAA and the Examination Board for delivery of examination and assessment services. If you fail to provide all the data, or if any of the data are inaccurate or incomplete, the HKEAA and the Examination Board may not be able to accept your entry or provide all or part of the examination and assessment services. The personal data submitted may also be used for:

- (1) assisting tertiary institutions and other government/public organizations in their admission processes;
- (2) assisting tertiary institutions and other government/public organizations in respect of their requests for information in granting scholarships;
- (3) assisting tertiary institutions and other government/public organizations to confirm the candidates' eligibility for financial assistance or other forms of subsidization, in which case, the necessary personal data of the candidates may have to be disclosed to the concerned organizations for verification;
- (4) assisting in the investigation of examination irregularities;
- (5) processing any refund or payment in relation to the examination;
- (6) conducting educational research and analysis in an anonymous format in which the identities of candidates are not traceable; and
- (7) marketing the services and products of the Examination Board (including examination services, courses, events, publications, and other examination materials or resources) subject to the consent of the candidates.\*

The HKEAA and the Examination Board may also transfer the personal data of candidates to third parties for use for the above purposes or other directly related purposes, including government/public organizations, schools and educational institutions, banks (for processing refund or payment), and service providers providing various administrative or technical services to facilitate the delivery of the examination and assessment services including but not limited to data punching, registration process, dispatch of examination documents, and the capture, disposal or other processing of data.

In compliance with the Personal Data (Privacy) Ordinance, access to all personal data will be made available, on payment of a fee, to anyone who can establish his/her right to be informed of such data as are retained by the HKEAA. Please also note that candidates' personal data/correspondence/other information received by the HKEAA may be transferred to the Examination Board concerned for delivery of examination and assessment services and for any of the abovementioned purposes or other directly related purposes. In general, upon completion of an examination or examination series and all the connecting examination services, the HKEAA will transfer all such data to the Examination Board who will then assume full control of such data. By then, candidates should approach the Examination Board direct for their personal data/information handling policies if necessary.

\*If you have given consent but wish to withdraw your consent for your personal data to be used for this purpose, please send a letter of request to the HKEAA.

*The Examination Board (Registration of Lift Engineers and Escalator Engineers)*

*October 2021*

## **Appendix A : Syllabus of the Written Examination**

The syllabus cover the following areas:-

- 1) Comprehension of relevant statutes, international standards and Codes of Practice:
  - a) Lifts and Escalators Ordinance (Chapter 618);
  - b) Code of Practice on the Design and Construction of Lifts and Escalators;
  - c) Code of Practice for Lift Works and Escalator Works;
  - d) Relevant International Standards (e.g. BS 5655(EN81) / BS5656(EN115));
  - e) Requirements of Fireman's Lift;
  - f) Factories and Industrial Undertakings (Goods Lifts) Regulations (Chapter 590) and Code of Practice for Safety at Work (Lift and Escalator) issued by the Labour Department;
  - g) Code of Practice on Building Works for Lifts and Escalators, relevant parts of Code of Practice for Fire Safety in Buildings and Design Manual — Barrier Free Access issued by the Building Authority / Buildings Department; and
  - h) Guidelines on Safety of Lift Shaft Works issued by the Construction Industry Council.
  
- 2) Knowledge of:
  - a) Lift/escalator theories –  
these include, but not limited to:
    - Mechanics of lifts and escalators;
    - Calculations and formula derivation for clearance distances required for lift car and counterweight under various situations;
    - Calculations and formula derivation for braking load required;
    - Calculations and formula derivation for gravity stopping distance;
    - Calculations and formula derivation for coefficient of friction and wrapping angle on traction sheaves required;
    - Calculations and formula derivation for type tests of various critical components of lift and escalator systems as required in BS5655/EN81, BS5656/EN115;
    - Calculations on capacity of lift and escalator systems;
    - Calculations on dead weight loading on supporting structure & deflection values of escalator systems;
    - Other lift and escalator knowledge.
  - b) Circular letters from EMSD related to lifts and escalators.
  
- 3) Practical experience in connection with the installation, commissioning, testing, maintenance and operation of machinery and safety equipment/components of lifts/escalators.

## **Appendix B : Sample questions of the written examination**

### ***Lift part:***

- Q.1(a) For a traction drive lift of 1.5 m/s rated speed, determine the required minimum clearance above the roof of the car enclosure when the counterweight rests on a fully compressed buffer. Your answer should be accompanied with appropriate sketches.
- Q.1(b) Explain the meaning of “gravity stopping distance at 115% of rated speed” and clarify its importance.
- Q.1(c) In case reduced stroke buffers are used for a high speed lift (for example, rated speed faster than 4 m/s), does the calculation of top clearances have still to follow that of part (a) above, or it can be reduced? If it can be reduced, explain why and how.
- Q.2 Please explain and describe the complete procedure in the periodic examination and testing of an existing lift. Your answer should include, but not limited to the following points:
- \* Tests and examinations required.
  - \* Components and devices to be examined or tested.
  - \* The expected outcome of these tests and examinations under normal situations.
  - \* Certificates and reports involved.
  - \* The actions or responses to irregularities or unsatisfactory test/ examination result if any.

### ***Escalator part:***

- Q.1(a) Suppose you are now to put up an escalator of 10 metre rise which is used to connect a street (outdoor situation) and a shopping mall, state and explain the constraints on the choice of speed, the angle of inclination and any other additional appropriate requirements.
- Q.1(b) For some events stipulated in Clause 10.3.2.4 in Part 4 of Section E of the Code of Practice on the Design and Construction of Lifts and Escalators, some electrical safety devices of escalators should operate, which may cut off the supply to contactors or relay contactors. Describe and explain:
- \* The construction requirements of such a safety contacts.
  - \* The resulting action on the escalator equipment after the operation of any such devices.
- Q.2 State ‘True’ or ‘False’ with your justifications for each of the following statements. No mark will be given for answers without justifications.
- (i) The safety factor for any part of the driving machine constructed of cast iron, based on the static load, shall be not less than 10.
  - (ii) The radius of curvature of a passenger conveyor in the upper transition from incline to horizontal section shall be at least 1 m for rated speed at or below 0.5 m/s and at least 1.5 m for rated speed exceeding 0.5 m/s.
  - (iii) .....
  - (iv) .....