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25 July 2011

To: All Registered Lift/Escalator Contractors

Dear Sirs,

**Circular No. 12/2011**

**Written Examination for Candidates**

**Applying for Registration as Lift and/or Escalator Engineers in 2011**

Please be informed that written examinations for candidates applying for registration as lift engineers and/or escalator engineers in 2011 will be arranged by the Examination Board formed with representatives from this department and three local universities. Details of the arrangement are given in the information leaflet as attached.

As indicated in the leaflet, the examinations will be held on 5 November 2011 (Saturday) and the application period is from 26 September to 21 October 2011.

Should you wish to recommend any of your staff members to apply for the examination, please make sure that applications are submitted within the above-mentioned period. Photocopy of the application form is also acceptable.

Yours faithfully,

(W.S. CHUI)

for Director of Electrical and Mechanical Services

W.S.C.  
Encl.



**EMSD**



**Information Leaflet on**

**Written Examinations for Candidates Applying for**

**Registration as Lift Engineers and Escalator Engineers**

**under the Lifts and Escalators (Safety) Ordinance**

**(July 2011)**

by  
**The Examination Board (Registration of lift engineers and escalator engineers)**



## Written Examinations for Candidates Applying for Registration as Lift Engineers and Escalator Engineers under the Lifts and Escalators (Safety) 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). Under the Examination Committee, the Examination Board (Registration of lift engineers and escalator engineers) is formed. From 1998 onwards, the Examination Board will arrange 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 EMSD, universities, lift and escalator contractor associations, and the International Association of Elevator Engineers (HK-China Branch).
- 1.3 The Examination Board is formed with representatives from EMSD and universities.

### **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 1 year 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 essay type. Candidates are allowed to bring relevant Ordinances, 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. However, he/she may select to take both parts 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 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 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 Appendix A & B for the syllabuses and sample questions for the Examination.

### **6.0 Date of the Examination in 2011**

In 2011, the Examination will be held once. The date is Saturday, 5 November 2011. On the date of examination, the morning session (10:00 a.m. to 1:00 p.m.) is for the lift part, and the afternoon session (2:30 p.m. to 4:30 p.m.) is 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 must be a Registered Lift/Escalator Engineer/Contractor, or the applicant's employer.

**7.2 Application period** - The application period for the Examination in 2011 are the office hours on:

- 26 September to 21 October 2011 for the examination on 5 November 2011.

**7.3 Obtaining application form** - During the application period, application forms and these leaflets can be obtained free of charge from the following locations (Note: photocopies of application forms are acceptable):

- City University of Hong Kong: School of Continuing and Professional Education (SCOPE), Lower Ground Floor, Academic Exchange Building, City University of Hong Kong, Tat Chee Avenue, Kowloon. Tel.: 3442 7423.
- SCOPE Admiralty Learning Centre, 8/F, United Centre, 95 Queensway, Admiralty, Hong Kong. Tel: 3442 2111.
- Electrical & Mechanical Services Department: Lifts & Escalators Sub-division, 3 Kai Shing Street, Kowloon, Hong Kong. Tel.: 2808 3623.

**7.4 Submission of application form** - During the application period, candidates may submit their completed application forms in person or by mail to the following locations:

- City University of Hong Kong: School of Continuing and Professional Education (SCOPE), Lower Ground Floor, Academic Exchange Building, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Kowloon.  
Tel.: 3442 7423.

**Note:** The log-in dates of mailed applications are judged by post marks.

**7.5 Items to be included in each application** - Each candidate has to include all the following in his/her application:

- A signed and completed application form.
- A cross cheque of HK\$1,000 or HK\$500 which should be made payable to "City University of Hong Kong" (HK\$1,000 for an application to enter both the lift part and the escalator part, HK\$500 for an application to enter only one of the two parts.)

**Note:** Incomplete or unpaid applications will not be processed.

**7.6 After the application** - 1 week before the date of the examination, each applied candidate should receive an acknowledgement letter (or fax/phone message, in urgent cases) to inform him/her the venue of examination and his/her examination number. A copy of instructions to candidates and examination regulations will be attached in that letter or fax/phone message. Candidates should follow the instructions to attend the examination. Candidates have not received the above information by 4 days before the scheduled examination date should make an enquiry to SCOPE, City University of Hong Kong at 3442 7423.

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



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

An examination result will normally be informed to all candidates within 5 weeks after the examination. The examination result is in form of “a pass” or “a fail”, not marks or grades. Passed candidates are required to come in person to sign on and collect the pass certificates. If candidates have not received their results after the 5 weeks period, they should contact the Examination Board.

### **9.0 Appeals**

If a candidate is dissatisfied with the examination result, he may lodge an appeal to the Examination Board within 14 days after the issuing of the examination result. Such an appeal must be made in writing to the Examination Board via the following address and must be accompanied by a cheque of HK\$300 (made payable to “*City University of Hong Kong*”).

The Examination Board (Registration of lift engineers and escalator engineers)  
c/o Mr. Arthur WONG  
School of Continuing and Professional Education,  
City University of Hong Kong,  
Tat Chee Avenue, Kowloon.

Each appeal will be handled directly and carefully by the Examination Board and then the Board will inform the concerned candidate about the result of the appeal, which is only in form of “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:

<http://www.cityu.edu.hk/ce/rleree>

*The Examination Board (Registration of lift engineers and escalator engineers)*

*July 2011*

## **Appendix A : Syllabuses of the written examination**

The syllabuses cover the following areas:-

- 1) Comprehension of relevant Ordinances, International Standards and codes of practice:
  - a) Lifts and Escalators (Safety) Ordinance (Chapter 327);
  - 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 59) 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 Resisting Construction and Design Manual — Barrier Free Access issued by the Building Authority.
- 2) Knowledge of:
  - a) Building (Lifts) Regulations (Chapter 123);
  - b) Building (Escalators) Regulations (Chapter 123);
  - c) Lift/escalator theories –  
these include, but not limited to:
    - Simple kinematics of the motion of lifts and escalators.
    - Calculations and formula derivation of various required clearance distances for lift car and counterweight under various situations.
    - Calculations and formula derivation on required braking load.
    - Calculations and formula derivation of gravity stopping distance.
    - Calculations and formula derivation on required coefficient of friction and wrapping angle on traction sheaves.
    - Calculations and formula derivation on various type tests on 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.
  - d) 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 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 height 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) of 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 shall include, but not limited to the following points:
- Tests and examinations required and their appropriate timing.
  - Components and devices to be examined or tested.
  - The expected outcome of these test and examinations under normal situations.
  - Certificates and reports involved.
  - The process in handling unsatisfied circumstances.

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

- Q.1(a) Suppose you are now granted a contract to supply 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 the Clause 10.3.2.4 in the 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 statement. No marks 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 conveyer in the upper transition from incline to horizontal 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) .....

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