

L3C3



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

**IFE Level 3 Certificate in Fire Science, Operations,
Fire Safety and Management**

Unit 3: Fire Safety (L505/5750)

SAMPLE

Instructions to Candidates

1. You **must** record all of your answers in the answer book provided.
2. You must answer **all** questions in the examination paper.
3. The marks available for each question are shown at the end of the end of the question. Questions may be answered in any order. You should follow the instructions provided in the question when composing answers.
4. At the end of the examination, the answer book and this question paper will be collected by the invigilators. You will not be allowed to keep any examination stationery.
5. The time allowed for this examination is **one hour**.

Question 1 - Building Construction and Fire Resistance

- a) Describe two different types of fire resisting floors and explain how each of them may be constructed in order to achieve the required fire resistance. (6 marks)
- b) Explain the way that structural steel behaves in fire and describe two options for improving the fire resistance of steel frames. (4 marks)

Question 2 – Building Materials and Systems and Fire Resistance

- a) Describe two types of fire-resistant glass. (4 marks)
- b)
- i) Describe how *intumescent paint* protects surfaces. (2 marks)
 - ii) Explain how non-fire retardant paints pose a hazard in a fire. (2 marks)

Question 3 – Fixed Installations (Water)

- a) Describe the basic components of design of any sprinkler system. (6 marks)
- b)
- i) State the purpose of drencher systems and describe briefly the way a drencher system operates. (3 marks)
 - ii) List the three main types of drenchers. (3 marks)

Question 4 - Fixed Installations (Non- Water)

With regard to fixed *carbon dioxide installations*, explain four factors that should be considered when determining the type of installation and the quantity of the gas required.

(4 marks)

Question 5 – Fire Warning and Detection Systems

a) Describe the principles of operation of flame detectors and state two types of location where they would be appropriate.

(4 marks)

b) Describe four functions of the control unit of a modern fire detection and alarm system.

(4 marks)

Question 6 - Fire Safety Practice

a) Describe four factors that would be taken into account when determining the number and size of protected areas used for progressive horizontal evacuation.

(4 marks)

b) State four locations where emergency escape lighting should be provided in a building.

(4 marks)