

L3D2



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

IFE Level 3 Diploma in Fire Science and Fire Safety

Unit 2: Fire Safety (F/505/6006)

Thursday 8 March 2018

10.30 – 13.30

Instructions to Candidates

1. The time allowed for this examination is **THREE** hours.
2. Candidates must answer **SIX** questions from the total of **EIGHT** questions set for this examination.
3. All questions carry equal marks and may be answered in any order. Candidates should follow the instructions provided in the question when composing their answers.
4. Candidates should record all of their answers in the answer book provided.
5. The question paper must be handed in with the answer book.

Question 1

- a) Identify the two classes of smoke detectors commonly used in domestic premises and briefly describe how each one operates (including the type of smoke particle that each is best able to detect). State where each would be best positioned in a domestic setting.
(10 marks)
- b) Heat detectors operate in two distinct ways. Explain the two operating methods and state (with explanation) the type of heat detector that you would recommend for fitting in a kitchen.
(4 marks)
- c) Explain the term “thermal lag” in relation to heat detectors.
(2 marks)
- d) Explain how a Carbon Monoxide fire detector works and give two reasons why Carbon Monoxide fire detectors are rarely recommended for domestic use.
(4 marks)
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Question 2

- a) Describe the design features of a dry rising main in a building.
(10 marks)
- b) Explain how installed dry riser systems can assist with firefighting operations.
(4 marks)
- c)
- i) State three applications of a gaseous extinguishing system (such as CO₂).
(3 marks)
- ii) State three limitations of a gaseous extinguishing system (such as CO₂).
(3 marks)
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Question 3

- a) Explain the reasons for carrying out fire drills. (6 marks)
- b) Outline the factors you would take into account when preparing for, and conducting, a staff evacuation exercise at a heritage property. (8 marks)
- c) Describe six issues that you would cover in a de-briefing session following an evacuation exercise. (6 marks)
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Question 4

- a) State the two types of fixed hydraulic hose reels used in some large buildings and describe the differences between the two types of hose reel. (4 marks)
- b) Explain the issues to be taken into consideration by building managers who have fixed hose reel systems fitted (available) in their building. (6 marks)
- c) Outline the criteria to be taken into account when selecting and siting portable firefighting equipment in a building. (10 marks)
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[Please turn over]

Question 5

- a) Explain the two main purposes of compartment walls and compartment floors. (4 marks)
- b) Identify four places where you would expect to find compartment walls and/or compartment floors in a building. (4 marks)
- c) Explain the purpose and use of fire dampers within buildings. (4 marks)
- d) Identify and describe the two types of fire dampers in common use. (8 marks)
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Question 6

- a) Describe the particular factors that need to be considered when planning escape routes from marquees, tents and temporary structures used as places of public entertainment. (8 marks)
- b) Exit routes from sports stadia must be planned and managed to provide spectators with a safe passage through the exit system until they reach the boundary of the ground or, in an emergency, a place of safety. Describe the factors that should be place in order to achieve this. (12 marks)
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Question 7

- a) Define what is meant by the term “evacuation lift”. (3 marks)
- b) Explain why lifts are not usually considered in the evacuation procedures in buildings. (3 marks)
- c) Describe how lift installations in buildings should be protected from the effects of fire. (10 marks)
- d) Explain the difference between an evacuation lift and a firefighting lift. (4 marks)
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Question 8

- a) There are many different designs of sprinkler head but they may be generally divided into two categories based on their operating methods. Describe both of these. (10 marks)
- b) Explain the operation and design of a pendant sprinkler head and state where this type of sprinkler head may be used. (5 marks)
- c) Explain the design and use of a sidewall sprinkler head. (5 marks)
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