

IFE Level 3 Diploma in Fire Safety and Fire Science

Unit 2 – Fire Safety (Zone 2)

Examiner Report – March 2018

Introduction

35% of the candidates that sat the examination attained a pass.

Candidates performed best on questions 2 and 3 and performed least well on question 7.

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)*

Examiner Feedback

Part a) was generally answered well and most candidates gained the majority of their marks for this question from their response to part a).

There were some good responses to part b) but many candidates provided insufficient technical information to attain all of the marks available.

The term “thermal” lag was poorly understood with few candidates providing correct responses. Candidates should be aware that thermal lag occurs when rapid temperature increases cause the heat detector to alarm at a temperature higher than its set point.

Carbon monoxide fire detectors were poorly understood and few candidates provided detailed responses to this part of the question.

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)*

Examiner Feedback

This question was a popular choice for candidates and many candidates attained 8 marks or above for their response.

Part a) was usually answered well. Some candidates supported their response with diagrams. Although the diagram was not required, examiners were able to give marks where features were clearly shown and labelled on the diagram.

Part b) was often answered well with many candidates securing all four of the marks available.

Part c) was also answered well with most candidates demonstrating good understanding of these types of system.

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)*

Examiner Feedback

Part a) and part c) were usually answered well with many candidates attaining a high proportion of the marks available for these questions.

In responding to part b), candidates who gave consideration to issues relevant to planning and carrying out an evacuation exercise at a heritage property were able to attain high marks. However, some candidates provided irrelevant information and others responded as though they were attending an operational incident. Candidates who considered the context and who considered the factors that they wanted to test (eg the use of alternative escape routes by ruling that main thoroughfares are not available) were able to secure high marks.

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)*

Examiner Feedback

In responding to part a), many candidates were unable to identify that the types of fixed hydraulic hose reels were manual and automatic; the difference between the two is that with the manual hose reel, the water supply must be turned on by means of a control valve whereas with an automatic hose reel the water turns on automatically once some hose has been pulled off the reel.

Candidates identified many relevant points in response to part b). However, few considered the danger that the people using the hose reels may tackle the fire for too long and become oblivious of the dangers they could be facing from smoke and toxic fumes.

There were 10 marks available for part c) but many candidates provided only a few points in their responses. There were a range of issues for consideration including the selection of equipment based on the nature of the risk, the position of the equipment in relation to risk and exits, the accessibility of equipment and the prevention of vandalism.

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)*

Examiner Feedback

In response to part a), candidates often referenced the role of compartment walls and floors in relation to keeping fire out of either a compartment or an escape route but few referenced the need to contain fire to compartments or to reduce the chance of fires becoming large.

Part b) was often answered well although candidates sometimes appeared to list every location that they could think of rather than demonstrating in-depth understanding.

In responding to part c), candidates often provided responses that lacked precision. Candidates often referenced ventilation and air conditioning ducts but omitted to go on to explain the need to maintain the integrity of fire-resisting compartments and protected escape routes.

Many candidates were unable to identify the two types of fire dampers. Candidates who were familiar with, and understood the working of, mechanical fire dampers (fusible link) and intumescent coated honeycomb dampers were able to secure good marks.

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)*

Examiner Feedback

Responses to part a) were often limited. Many candidates failed to consider the issues specific to the context and listed only generic points without reflecting on the implications in the context of a marquee. Marks were attained for referencing issues such as labelling of exits, making sure exits were appropriate for those with mobility issues and consideration of the time that the event took place. However, the lack of context-specific factors limited the marks that could be attained.

Specific points which were omitted included: escape routes should be sited away from marquees to avoid trip hazards from guy ropes and stakes, exit routes from marquees may be over uneven ground or temporary flooring/duckboards/ramps etc, any long grass should be cut and all cuttings removed to prevent a fire risk, there is a need to take into account the positioning of any wires/power/fuel sources going into the tent/marquee and there should be at least two exits from a marquee.

There were 12 marks available for part b). Many candidates provided only brief responses and secured only a few of the marks available. Candidates often made good points in relation to human behaviour and adequate exit facilities. However, responses often lacked depth and many candidates omitted to consider basic issues such as the fact that doors and gates should be capable of being immediately opened by those using the route in an emergency, exit routes should be clear of obstructions and procedures for checking whether the premises have been evacuated should be in place.

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)*

Examiner Feedback

This question received many poor responses.

In response to part a), few candidates provided sufficient detail to secure many marks. Candidates should be aware that: an evacuation lift is a lift used as part of the evacuation strategy for people requiring assistance; the lift has the appropriate structural, electrical and fire protection provisions and is capable of being taken under control by an authorised person.

Few candidates provided a considered response to part b). Most candidates simply stated that people are aware of the guidance that states that lifts should not be used in an emergency. More considered responses would have taken into account concerns about occupants using the lift becoming trapped due to loss of power, concerns that lifts could discharge occupants onto the floor containing the fire and concerns long waits for the lift car to arrive extending the escape time.

Part c) was often answered poorly and few candidates scored more than one or two marks for their response. In order to attain high marks, candidates needed to give consideration to issues such as the protected shaft, approach by way of a protected lobby or protected corridor, implications in relation to basements and areas of risk, placing of lift machinery and alternative power supplies. Some candidates focused their response on the features inside the lift and cited issues such as communication facilities and adequate space for wheelchair users rather than considering the installation arrangements as required by the question.

Part d) was usually answered well with many candidates familiar with the way that a firefighting lift is used.

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)

Examiner Feedback

Part a) was often answered well with most candidates identifying the two types of sprinkler head correctly ie fusible link and glass bulb sprinkler heads. Candidates often provided several relevant points in their descriptions.

Parts b) and c) were less well answered. Candidates generally recognised that pendant sprinklers hang down from the ceiling and sidewall sprinklers protrude through the wall. However, few were able to add additional information in relation to the way that water is sprayed – the fact that a sidewall sprinkler has only half of a deflector which sprays water in a half circle or crescent shape did not appear to be appreciated. Candidates often omitted to state where a pendant sprinkler head might be used.