

# IFE Level 3 Diploma in Fire Safety and Fire Science

## Unit 2 - Fire Safety

### Examiner Report

#### Introduction

Candidates performed well on the paper with 38% of candidates achieving a Pass; this was an improvement on the pass rate of 23% in 2014.

As in previous years, many candidates provided responses that lacked depth and/or failed to address the full requirements of the question. Candidates should be aware that a question that includes the word “explain” requires more than a basic list of points. At level 3, candidates need to provide answers that demonstrate understanding and an ability to apply understanding to different contexts.

Candidates performed least well on questions 2 and 6 where an understanding of structure was required.

#### Question 1

- a) Describe with the use of a diagram a:
- i. Mansard roof (4 marks)
  - ii. Trussed roof (4 marks)
  - iii. Portal roof (4 marks)
- b) Explain the behaviour of the following roof components in a fire:
- i. Connectors (2 marks)
  - ii. Slates and tiles (2 marks)
  - iii. Trussing (2 marks)
  - iv. Steelwork (2 marks)

#### **Examiner Feedback**

This question was generally answered quite well. Most candidates provided appropriate diagrams of different types of roofs as required by the question; however, few were able to achieve full marks as annotations of the diagrams/supporting notes lacked sufficient detail for the candidates to achieve all of the marks available.

In response to part b), some candidate wrote about the characteristics of the different roofing materials rather than explaining their behaviour in fire and this limited the marks available to them; for example, candidates often cited the temperature at which steel loses its stability but did not describe how it performs as a component of a roof in a fire (ie steel is vulnerable to heat and a fairly rapid collapse can follow if steelworks are unprotected; depends on the type of roof being supported and whether any roof venting is provided).

## **Question 2**

- a) *Draw a diagram showing the layout of a typical firefighting shaft. Annotate the diagram and indicate the levels of fire resistance provided by each of the walls and doors. (8 marks)*
- b) *Describe the factors to be taken into account when providing firefighting shafts within buildings. (12 marks)*

### **Examiner feedback**

Responses to this question were often poor with candidates failing to demonstrate understanding of the design and structure of firefighting shafts.

Many candidates who responded to the question were unable to provide an appropriate diagram and failed to identify the required level of fire resistance.

In response to part b), some candidates listed types of buildings rather than describing the factors/criteria for the provision of firefighting shafts.

## **Question 3**

- a) *Identify the seven different types of sprinkler system. (7 marks)*
- b) *Outline where any three of the types of sprinkler system would typically be found and explain why this is the case. (6 marks)*
- c) *Identify four of the main types of water supplies used to feed sprinkler systems. (4 marks)*
- d) *Explain the purpose of three of the main valves fitted to sprinkler systems. (3 marks)*

### **Examiner Feedback**

This question was generally answered well and some candidates achieved high marks.

Candidates demonstrated good knowledge of sprinkler systems. However, some candidates wrote about types of sprinkler head rather than about sprinkler systems.

## **Question 4**

- a) *In terms of fire testing define:*
  - i. *Stability (2 marks)*
  - ii. *Integrity (2 marks)*
  - iii. *Insulation (2 marks)*
- b) *Outline a typical method for determining the fire resistance of a timber fire door. (10 marks)*
- c) *Explain the two standards by which the fire test is measured. (4 marks)*

### **Examiner Feedback**

This question was not answered well. Many candidates focussed their answer to all parts of the question on fire resistance rather than *fire testing* and, as a result, their responses did not address the question asked. For example, in response to part c) candidates often failed to identify the standards by which *fire testing* is measured as:

- Integrity failure is deemed to occur when cracks or other openings develop through which flames or hot gases can pass or when flaming occurs on the unexposed face

- Insulation failure is deemed to occur when the rise in temperature on the unexposed side reaches specific levels
- Both are measured in minutes to failure

### **Question 5**

- In terms of means of escape, define the terms “travel distance” and “dead end”. (2 marks)*
- What hazards are normally associated with dead ends? (2 marks)*
- Explain the measures that can be taken to reduce the hazards and risks of dead ends. (10 marks)*
- Explain with the aid of a diagram the 45 degree rule. (6 marks)*

### **Examiner Feedback**

Many candidates failed to provide an appropriate definition for “dead end” in part a); answers should have referenced the fact that this is an “area from which escape is possible in one direction only.”

In response to part c) many candidates focussed on measures to prevent people going into dead ends and omitted to identify the options to reduce the hazards and risks for people in, or escaping, from the area. Good responses included:

- Ensuring that the travel distance in a protected route from the dead-end is as short as possible
- Ensuring that smoke detection is fitted on the escape route corridor so as to provide early warning
- Ensuring fire doors are in place with vision panels and smoke seals
- Ensuring that corridors are kept clear of material that might provide fuel for a fire or obstruct exit routes

### **Question 6**

- Explain the two main purposes of compartment walls and compartment floors. (4 marks)*
- Identify and briefly outline five places where you would expect to find compartment walls and/or compartment floors in a building. (10 marks)*
- Where ventilation ducts pass through a compartment wall there are three methods that can be used to maintain the integrity of the wall. Describe the three methods. (6 marks)*

### **Examiner Feedback**

This question was not answered well and many candidates did not demonstrate understanding of compartment walls and floors.

In response to part b), many candidates wrote about buildings (eg hospitals) rather than about *places in a building* where you would expect to find compartment walls (eg every wall needed to sub-divide a building to observe the size limits on compartments.)

In part c), the three methods required were: protection using fire dampers, protection using fire-resisting enclosures and protection using fire-resisting ductwork.

### **Question 7**

- a) Explain the difference between an unwanted fire signal and a false alarm. (4 marks)*
- b) Explain eight different measures that can be taken when designing, installing and managing fire alarm systems to reduce the incidence of false alarms. (16 marks)*

#### **Examiner Feedback**

In response to part a), some candidates failed to explain that an unwanted fire signal is linked to the attendance of the fire service.

Candidates were usually able to identify some appropriate measures to reduce the instance of false fire alarms. However, many candidates did not identify eight measures as required by the question and many failed to “explain” the measure as required by the question. Those candidates who listed points without explanations were unable to achieve the marks allocated for explanations (ie one per measure); in addition, candidates should be aware that examiners can only award marks where the candidate’s answer is clearly linked to the question so single words/generic short phrases that lacked sufficient explanation did not attract marks.

### **Question 8**

- a) Identify and explain five criteria that should be followed when locating and installing fire escape signs. (10 marks)*
- b) Fire safety signs serve different purposes, often by being displayed in different colours. Explain any two of these purposes. (4 marks)*
- c) Detail six items that would normally be found on a Fire Action Notice. (6 marks)*

#### **Examiner Feedback**

In response to part a), successful candidates recognised that signage should be clear, include direction arrows and visible. Some candidates focussed only on listing specific locations and this limited the marks that they could achieve. Many candidates omitted to include an explanation for each point.

Many candidates were unable to apply to relate the colour of signs to their purpose when responding to part b).

Candidates generally provided a good response to part c).

### **Question 9**

- a) Explain the reasons why fire drills are carried out. (8 marks)*
- b) Describe how you would carry out a fire drill at a medium-sized hotel which uses a single stage alarm. (6 marks)*
- c) What issues would you include in any debrief following a fire drill? (6 marks)*

#### **Examiner Feedback**

This question was a popular question and many candidates provided a good response.

Candidates generally provided a good response to parts a) and c).

Part b) was the least well answered part of the question as some candidates omitted to link their response back to the specific context given in the question.

### **Question 10**

*Every Fire Risk Assessment should include an emergency plan.*

- a) What is the purpose of an emergency plan? (4 marks)*
- b) Detail 10 items you would include in an emergency plan for an outdoor event attended by up to 5000 people. (10 marks)*
- c) Describe six items that need to be considered when liaising with the local Fire and Rescue Service when planning the event. (6 marks)*

### **Examiner Feedback**

Some candidates were unable to explain the purpose of an emergency plan; some confused the plan with a fire procedure notice.

Candidates who linked their response to the specific context provided in the question were able to achieve high marks for part b); again, some candidates ignored the specific context and provided only a list of short generic points and therefore achieved few, if any, marks.

Part c) was the least well answered point as candidates often failed to consider issues such as access in and out of the site for fire and rescue vehicles, availability of mains services (especially water) and the slope/unevenness of ground.