

# IFE Level 4 Certificate in Fire Safety and Fire Science

## Unit 2 – Fire Safety

### Examiner Report – March 2018

#### Introduction

42% of candidates achieved a pass.

Candidates performed best on questions 1 and 8; they performed least well on question 3.

#### Question 1

- a) *Using a diagram, specify the elements of ASET/RSET. (12 marks)*
- b) *Explain the human behaviours which can affect 'pre-movement time'. (8 marks)*

#### **Examiner Feedback**

This question was often answered well. Candidates performed particularly well on part a) with many providing detailed diagrams that identified and showed the relationship between different elements. Candidates sometimes failed to label the timeline on the horizontal axis of their diagram ie to show ignition, detection, alarm, evaluation complete and tenability limit.

Part b) was less well answered as candidates often provided only a few brief points usually connected to mobility/physical abilities of individuals and group ties. Good responses divided points into factors affecting recognition and factors affecting response time. Some candidates slipped into describing factors related to travel time.

#### Question 2

*Explain the general design principles of smoke control and ventilation systems that may be used in a shopping mall. (20 marks)*

#### **Examiner Feedback**

Candidates that considered the purpose of smoke control and ventilation systems in terms of keeping malls and public concourses smoke free for as long as possible to enable escape in the event of fire were able to identify relevant design requirements and principles. Some candidates provided excellent responses taking into account the likely flow of people escaping, the speed of smoke flow, the tendency for cooling smoke to fall, the factors affecting reservoir size and the size and position of inlets and exhausts.

Some candidates answered the question from the perspective of operational firefighters and wrote about the benefits of SHEVs. Unfortunately, these responses presented information that was largely irrelevant and examiners were not able to award marks.

### **Question 3**

*In relation to a tall multi-occupied office building, explain the practical difficulties relevant to disabled refuges from the perspective of building management and disabled users. (20 marks)*

#### **Examiner Feedback**

This question was a popular option for candidates but responses were often limited and few candidates attained more than 6 marks for their response.

Candidates were asked to consider two different perspectives ie that of building managers ensuring that the refuge was available and fully functional and that of individuals with disabilities who would need to use the refuge. Many candidates wrote about refuges in general rather than focussing on the specific issues for either building managers or users of the refuges; other candidates presented a response focussed on only one of the perspectives.

Examples of the types of practical issues that could have been considered in the context of building managers include:

- Refuges are part of the building fabric but the needs of individuals in the building can change eg wheelchairs may be bigger and the number of people who need to have the use of refuges may grow
- Need to be able to maintain communication links with all refuges effectively
- Personal Emergency Evacuation Plans may vary over time
- Procedures should allow for simulation in the case of fire drills so that managers can ensure that the needs of disabled users are being considered and that the plans in place are effective
- Need to ensure enough space/refuges for all potential users
- Need to consider carers and people with group ties

Examples of the types of practical issues that could have been considered in the context of disabled users include:

- Users may feel fear and isolation and may be uncomfortable with the approach
- Potential users may be in an unfamiliar building – need to make sure they have training/awareness; this is also true for new residents/newly disabled
- Users may feel that they don't know or trust the building plan so will attempt to escape rather than using the refuge which could cause injury to themselves or others
- Carry down chair – separated from own wheelchair- so concern about what happens at the bottom of the stairs
- Unable/Unwilling to take part in practice drills leaving a sense of concern/uncertainty.

### **Question 4**

*A qualitative design review (QDR) is the initial stage of any engineering design where the basic parameters are established and the scope and objectives of the fire strategy are defined. Explain the formal process of QDR. (20 marks)*

## **Examiner Feedback**

This question required specialist knowledge of QDR. It was not a popular option for candidates and many of the candidates attempting the question attained only low marks.

Some candidates attempted the question without specialist knowledge and wrote about generic project management.

Successful candidates recognised that QDR identifies significant hazards and most likely scenarios so the level of quantified design can be established. These candidates were able to identify the people who should be involved in the process and to identify the actions required to identify possible fire hazards and the range of possible strategies which maintain risk at an acceptable level.

## **Question 5**

*You have been asked to advise the planning committee for a very popular international sporting event in an indoor arena. Explain the special fire safety challenges that such an event presents. (20 marks)*

## **Examiner Feedback**

This question was a popular option for candidates. There were many different areas that could have been considered but few candidates presented good responses.

The types of areas that could have been considered included: managing large numbers of people many of whom are unfamiliar with the area, human behaviour at large events, particular hazards such as fire loading and pyrotechnics, language issues and ensuring that adequately trained staff are available.

## **Question 6**

*You have been asked to carry out a review following a recent fire in a factory. The incident you are being asked to review was as follows:*

*A fire in an extraction system serving an area of hot works in a large factory ignited the core of metal sandwich panels where the ducting passes through the wall. The fire spread around the perimeter of the building and badly damaged the contents of the warehouse section. The production area was protected by sprinklers and was back in use after a few days.*

*Explain the fire safety matters that you would consider as part of the review. (20 marks)*

## **Examiner Feedback**

This question was a popular choice for candidates. Candidates who attained high marks considered the scope of the investigation and review from a range of angles including how the fire started, how the detection arrangements performed, how the fire spread, whether there were failures that need to be addressed in particular equipment/materials, how a similar situation could be prevented in the future and what alternative arrangements could be put in place.

### **Question 7**

*Describe three different types of gaseous fire suppression systems and explain their advantages and disadvantages for different situations. (20 marks)*

#### **Examiner Feedback**

Types of systems which could have been considered included:

- “Clean Agent’ non ozone depleting
- CO<sub>2</sub>
- O<sub>2</sub> Reduction, Hypoxic systems
- N<sub>2</sub>
- Halon systems

Some candidates were unable to identify three different systems. Candidates sometimes focussed on only one aspect of the question (eg description of the system) rather than focussing on the full question.

Some candidates were able to attain very high marks for this question.

### **Question 8**

*The plan provided shows a single storey factory with mezzanine floor and two storey offices. A fire warning system and an escape lighting system have been fitted. Portable firefighting equipment and exit signage have been provided. The factory is normal risk with 500 workers on the factory floor and 50 workers in the office section.*

*Referring to the plan, identify four fire safety problems. For each problem, provide an explanation of the issues, identify a solution and explain how your solution solves that problem. (20 marks)*

#### **Examiner Feedback**

Candidates that attempted this question usually performed well. There were several issues that could have been identified including the inner rooms, the lack of fire separation between factory and office section, excessive travel distance by loading bays, unprotected door below external stair from mezzanine and the very large factory floor area with different sections and no sprinklers.

Candidates sometimes failed to answer all parts of the question in sufficient detail; for example, candidates often stated the problem identified (eg inner rooms) but omitted to explain the fire safety issue (eg people are at risk from fire in the access room and no more than one access room is allowed).