

IFE Level 4 Certificate in Fire Safety and Fire Science

Unit 2 – Fire Safety

Examiner Report – March 2019

Introduction

28% of candidates achieved a pass.

Candidates performed best on questions 2, 5 and 8; they performed least well on question 3.

Most of the candidates who were unsuccessful in the examination were unsuccessful due to the fact that they did not provide enough information in their responses to secure higher marks. Candidates should be aware that examiners award one mark per valid point and therefore they should use the marks shown on the examination paper as a guide to the length and depth of responses required. Candidates often provided only a few basic points in their responses where high marks were available – this was particularly noticeable in responses to questions 1, 6 and 7 where 20 marks were available. Additional detail/explanation would have secured additional points.

Question 1

The evacuation of health care facilities in a fire situation presents unique challenges to staff and fire services. Explain the issues for consideration when preparing a fire safety strategy for very high dependency patients who cannot be moved in a fire. (20 marks)

Examiner Feedback

This question was the most popular question for candidates. However, responses were mixed and many candidates scored only 6 marks or fewer. Where candidates did present relevant issues for consideration, they often failed to expand on their points or to add sufficient detail or explanation to illustrate their point - this meant that they failed to secure additional marks. Candidates commonly referenced points such as compartmentation and refuges but few went beyond this to consider other protection arrangements.

A wide range of issues could have been considered such as:

- Patients with very high dependency are those whose clinical treatment and/or condition creates a high dependency on staff – will require expert advice
- Patients could include those in critical care areas, operating theatres and those where evacuation would prove potentially life threatening, as well as people with a mental health illness
- Full evacuation is usually only undertaken as a last resort. This delay will require additional fire precautions irrespective of patients' location and height above ground level.
- Provision of additional fire precautions such as: lower travel distance, lower height above ground, escape bed lifts; automatic suppression systems (for example sprinklers).
- Having identified the fire hazards (fuel load and ignition sources) they should be removed if it is reasonably practicable to do so

- Additional protection for very high dependency patients can include a combination of: very high level of observation, a very high staff-to-patient ratio, a high degree of refuge, additional sub-compartmentation, a higher level of fire training for staff, good communications (both within the department and between the coordinator and the fire service), additional zoning of the fire alarm.

Question 2

Use the “t²” model to explain how different fuels and fire loads lead to different fire growth rates and time to achieve a 1 MW fire. (20 marks)

Examiner Feedback

This was the least popular question on the examination paper with only a few candidates choosing to attempt it. However, those candidates who did attempt the question generally performed well with the average mark attained for the question being 8 marks.

Question 3

a) Explain the difference between a General Emergency Escape Plan (GEEP) and a Personal Emergency Escape Plan (PEEP) and give examples of situations where each type might be appropriate. (6 marks)

b) Describe the considerations that should be included in a GEEP. (14 marks)

Examiner Feedback

This question was a popular choice for candidates. Unfortunately, few candidates appeared to understand the purpose of a GEEP and this meant that responses often contained significant irrelevant/incorrect information and therefore achieved few marks.

Candidates should be aware that a GEEP is used in situations where people requiring assistance to evacuate are not regular users of the premises and/or quite likely have never visited previously. Examples of situations where a GEEP would be appropriate are hotels, places of assembly, places of entertainment, travel hubs, airports, stations, hospitals, visitors to workplaces

Many candidates wrote about PEEPs when responding to part b). This meant that they failed to address key issues such as engagement with people who are not familiar with systems, recognising that there may be a range of different requirements at the same time, identifying people in the building who may need assistance, access and egress, rights and dignity of individuals and issues relevant to staff training.

Question 4

- a) *Discuss the issues surrounding initial leakage pathways in a building provided with a pressurised system to support a means of escape strategy and explain how they influence means of escape arrangements. (12 marks)*
- b) *Explain what is meant by the term “final leakage path” and explain how these leakage pathways are created in modern buildings. (4 marks)*
- c) *Explain how changes in a leakage path affect the performance of a pressurised staircase. (4 marks)*

Examiner Feedback

Responses to part a) were often quite brief. There were 12 marks available for this question so short responses meant that candidates lost the opportunity to secure marks. Candidates often failed to explain links to means of escape; for example, an over-pressure of 50 (0.5 mbar) Pascals will mean that a little extra pressure will be required to open a door leading to the pressurised area. This is sufficiently small to allow most people to open such doors. However, any recommendation for the design of a pressurisation system should bear this fact in mind where children or the disabled are likely to be present.

Part b) was often answered well but candidates often failed to provide a detailed explanation in response to part c). Points that could have been made in response to part c) include:

- To be effective the pressurisation system must be higher than weather and fire conditions typically 45-50 Pa (0.45-0.5 mbar)
- Change in pathways (bigger, smaller or different route) can result in
- smoke logging in unexpected places and/or
- reduction in efficiency

Question 5

- a) *Describe the operating principles and components of a water mist fire suppression system. (16 marks)*
- b) *Identify two examples of situations where water mist systems may be appropriate and two examples where they are not appropriate and briefly explain why this is the case. (4 marks)*

Examiner Feedback

This question was generally answered well with many candidates demonstrating detailed technical understanding of these systems.

In response to part b) candidates often provided examples of systems where water mist systems may be appropriate but few candidates provided examples of situations where they are not appropriate. Examples of situations where they are not appropriate and which could have been provided include:

- Where there is high voltage (>1000 V AC or 1500 V DC)
- Where there are chemicals including carbides (creates acetylene)
- Where there are high fire loads (eg warehouse)

Question 6

You are reviewing the fire strategy for a large zoo. The zoo receives visitors from all over the world as it is well known for its role as a conservation and research centre. Explain the factors that may affect the fire strategy for individual buildings, enclosures and the site as a whole. (20 marks)

Examiner Feedback

Responses to this question were mixed with some candidates securing high marks for their responses and others identifying only a few relevant points and therefore attaining fewer than 6 marks. Again, some candidates failed to appreciate that a 20-mark question required a detailed response and presented only a few brief paragraphs containing only a few basic concepts.

A wide range of issues could have been considered in responses such as:

- likely to be a large site with several separate zones and buildings but only one main public entrance/exit gate in the perimeter
- each building should have its own fire strategy; there is no need to evacuate every building simultaneously due to an incident in one. However, there should be a strategy to close down and evacuate the entire site in extreme emergency
- the fire strategy will be complex and may involve marshalling the crowds outside the affected building
- consideration for access for the fire service through busy crowds and people evacuating the affected building
- nature of the crowd eg large numbers of people, unfamiliar with the premises, enjoying themselves, not expecting danger and possibly reluctant to leave because they have paid for entertainment, different languages and cultures, social ties between families and groups who may have separated
- observing and considering the effects on animals may have an impact on human behaviour in the fire and evacuation flow dynamics of the visitors
- Potentially extremely valuable stock especially if they are working on conservation of endangered species
- some of the keepers may place themselves in danger to rescue animals that they care for
- many animals will be dangerous and unpredictable when frightened by fire
- research buildings may contain hazardous chemicals

Question 7

Lifts/Elevators, escalators and travellers are often used to aid the movement of people around a building on a daily basis. Explain the advantages and problems of using them in an emergency evacuation. (20 marks)

Examiner Feedback

This question was a popular choice for candidates. Most candidates successfully identified some advantages and some problems of using lifts/elevators, escalators and travellers in an emergency. However, as with other responses, candidates often identified a few relevant

points but then omitted to expand on the points. This approach limited the additional marks that could be secured.

Candidates often wrote about lifts only, particularly in the context of human behaviour. Although marks were awarded for these points, additional marks could have been secured by presenting points relevant to travellers or escalators. Also, in considering the advantages and problems of different mechanical options, candidates often omitted to recognise that there are performance issues (eg width, capacity) and technical requirements (eg protected shafts) that influence the advantages or problems associated with different options.

Question 8

You have been asked to advise a large independent department store. The store employs over 300 staff and there are some franchises in the building. At peak periods there may be 2000 customers inside the shop. Make recommendations on the content of fire safety training to ensure relevant knowledge and understanding for:

- a) senior managers and department heads who make strategic and policy decisions. (15 marks)*
- b) supervisors who lead teams of fire wardens. (5 marks)*

Examiner Feedback

There were many good responses to this question with candidates often able to recognise the critical role of senior managers in driving fire safety and setting an example. Responses to part b) were particularly good with many candidates able to achieve most, if not all, of the marks available.

In response to part a), candidates usually identified issues around staff training and implementation of policies and procedures; however, high scoring candidates also recognised the need to consider:

- business continuity in the event of fire damage or interruption of trading
- worse case scenarios and preparing for a real fire at peak trading times
- the structure of fire safety management and responsibilities within organisation
- setting up reporting route for defects
- setting up review systems
- co-ordination with franchise holders