

IFE Level 3 Certificate in Passive Fire Protection

Examiner Report – March 2019

Introduction

59 candidates entered for the examination. 50% of the candidates that sat the examination achieved a pass.

Candidates generally achieved a higher proportion of the marks available on section 1 of the paper than they did on section 2. Performance on section 2 was often patchy with candidates often demonstrating a high level of understanding of one or more of the four specialist areas but then performing less well on the other areas.

Candidates who failed the examination were usually quite a long way away from the pass mark. Over half of the candidates who failed scored fewer than 48 marks (ie under 40% of the marks available) – the pass mark for the examination was 60% with the pass mark being 72.

It appeared that some candidates were unfamiliar with examination techniques. For example, candidates often failed to appreciate that marks shown on the examination paper are a guide to the amount of information required in responses; some candidates had provided less information than was required whilst others wrote at length where only a few marks were available. Candidates are advised that one mark is awarded per relevant point and that the marks available are therefore an indication of how many relevant points are required in answers.

Candidates often failed to read examination questions carefully and/or failed to follow instructions. This was particularly noticeable where questions asked candidates to do two things such as “identify” and “describe” an item/issue – in these instances, candidates would often identify the item correctly but then omit to describe it; therefore, they were able to attain only half of the marks available as they had provided only half of the information required by the question.

Section 1 - General

This section of the examination tested the content of section 1 of the syllabus ie Fire and Fire Protection. There were 40 marks available. Candidates generally performed well on this part of the paper with around half of the candidates who sat the examination scoring at least 60% the marks available on this section. The highest score for this section of the paper was 38 marks.

Question 1

Explain the risks to human health associated with the inhalation of smoke. (6 marks)

Examiner Feedback

The question asked candidates to “explain” the risks but candidates often identified particles/vapours/toxic gases without providing the additional explanation required to secure

all of the marks available. For example, in relation to particles, marks could have been achieved for points such as:

- Partially burned, and completely burned, substances can get into the respiratory system's protective mechanisms.
- They can be toxic
- They can cause irritation to the eyes and digestive system.

Question 2

In relation to means of escape, explain what is meant by the following terms:

- a) evacuation time (2 marks)*
- b) occupancy (2 marks)*

Examiner Feedback

Candidates often failed to appreciate that these terms have specific meanings in relation to means of escape. Many appeared to provide their own view as to the meaning of the terms. Candidates should be aware that:

- The evacuation time is the interval between the time at which a warning of a fire is transmitted to the occupants and the time at which all of the occupants are able to reach a place of safety.
- Occupancy is the number of people in the building and the use to which the building is put.

Question 3

- a) Explain what is meant by the term "passive fire protection". (2 marks)*
- b) Identify two components of the building envelope and explain how each of these components can affect the fire resistance of a building. (6 marks)*

Examiner Feedback

Part a) of the question was usually answered well and nearly all of the candidates attained both of the marks available.

Part b) was less well answered as some candidates did not appreciate what was meant by the term "building envelope". Candidates who wrote about external elements such as walls and cladding were able to secure high marks.

Question 4

In relation to fire resistance, explain what is meant by the term "insulation" and explain why this is important. (4 marks)

Examiner Feedback

This question was usually answered well with many candidates demonstrating good understanding of the term.

Question 5

One of the measures used in assessing the way in which a material will react to fire is the extent to which it is combustible. Identify three other factors that can be used in measuring how a material reacts to fire. (3 marks)

Examiner Feedback

This question was often answered well with candidates usually able to identify at least two factors. Factors that could have been presented were:

- Ignition
- spread flame (over their surface)
- release heat (rate of/fire propagation)
- production of flaming droplets and smoke

Question 6

In terms of product testing, assessment and certification, explain the following:

- a) Certification from a Third-Party Certification Body. (3 marks)*
- b) An assessment from an accredited fire test laboratory or suitably qualified fire consultant. (3 marks)*

Examiner Feedback

This question was the least well answered on this section of the paper. Many candidates were unable to describe or explain either of the testing regimes.

Question 7

Identify five locations where emergency lighting should be located. (5 marks)

Examiner Feedback

This question was usually answered well with many candidates able to achieve full marks. Nearly all candidates scored at least a few marks for their response to this question.

Question 8

Explain what is meant by the term “Responsible Person” in the context of fire safety and state three of the activities they are required to carry out. (4 marks)

Examiner Feedback

Many candidates did not appear to know that the Responsible Person is the person who owns the premises or business or the person with control over the premises, business or activity. When identifying activities to be carried out by the Responsible Person, many candidates failed to consider risk assessments.

Section 2

Section 2 of the paper was divided into four sub-sections reflecting the four sub-sections of the syllabus ie:

- Fire protection to the structural frame and retardant coatings – questions 9, 10, 11, 12 and 13 tested this section of the syllabus and a total of 24 marks were available.
- Fire resisting walls, floors and ceiling and fire resistant glazing - questions 14, 15, 16 and 17 tested this section of the syllabus and a total of 20 marks were available.
- Fire stopping and penetration seals, cavity barriers, ductwork and dampers and the building envelope - questions 18, 19, 20 and 21 tested this section of the syllabus and a total of 24 marks were available.
- Fire resisting doors, industrial shutters and hardware - questions 22 and 23 tested this section of the syllabus and a total of 12 marks were available.

Only 25% of candidates secured 48 marks (ie 60% of the marks available) or above for this section of the examination. The highest mark attained on this section of the paper was 57. Some candidates attained only low marks with 27% attaining fewer than 33 of the 80 marks available.

Question 9

Describe the insulating materials that can be used to protect structural timber and state the factors that affect the required thickness of the protective layer. (4 marks)

Examiner Feedback

Many candidates did not appear to be familiar with the protection of structural timber and few candidates attained full marks for the question. Protective methods that could have been identified included gypsum plasterboard, calcium silicate board and impregnation. Factors to be considered included the density of the structural element, the fabric of the frame and the fire resistance period required.

Question 10

- a) Explain why the thickness and shape of a steel structure need to be considered when planning for appropriate fire resistance. (2 marks)*
- b) State and explain the “sector factor” formula used when determining the length of fire resistance. (3 marks)*

Examiner Feedback

Part a) was usually answered well.

Few candidates were able to provide sufficient correct detail to secure marks for part b). Even where candidates were able to state the formula, they often failed to secure the additional marks available for explaining how the formula was applied.

Question 11

State the three main types of intumescent coatings used on steel structural designs and give an example of a situation where each would be used. (6 marks)

Examiner Feedback

Most candidates were able to state at least one type of intumescent coating but, as with other questions, candidates often failed to meet the full requirements of the question in that they did not go on to give the required example of where the different types might be used.

The three types of intumescent coating that could have been provided in answers were: solvent-borne (thin film), water-borne (thin film) and epoxy (thick film). Solvent borne are often used in off-site applications where the solvent release can be managed; they are also more weather-resistant so are suitable for areas where exposure to the environment is likely. Water-borne are typically applied on-site to steel used in internal situations. Epoxy intumescent are high performance (thick film) coatings usually used in the oil and gas industry.

Question 12

Explain why it is considered best practice for sections of steel or structural elements to be protected by the same fire protection intumescent paint system. (4 marks)

Examiner Feedback

This question was usually answered well and there were many excellent responses where candidates were able to secure all of the marks available.

Question 13

Describe the process of impregnation treatments used for timber and wood-derived building materials and state the limitations with this type of treatment. (4 marks)

Examiner Feedback

Candidates often described the impregnation treatments but few candidates went to explore the limitations of the treatments. Where candidate did consider limitations, they usually identified (and secured a mark for) off-site treatment but other issues such as the fact that not all wood-based materials will tolerate impregnation or that subsequent cutting and sanding would remove the impregnated layer were omitted.

Question 14

Describe four functions of fire resisting partitions. (4 marks)

Examiner Feedback

This question was generally well answered and many candidates were able to secure all four of the marks available

Question 15

- a) *Explain how composite floors behave in fire. (4 marks)*
b) *Describe two factors affecting the fire resistance of concrete. (2 marks)*

Examiner Feedback

In responding to part a), few candidates recognised that expansion of the metal base would be an issue and this meant that they did not explore the effects of this expansion. Steam build-up between the metal deck and concrete as well as the shear connectors roll in composite action of the deck were also relevant to the question and largely omitted in the answers given.

When responding to part b), candidates often identified thickness of the concrete as a factor but did not consider other issues such as the support conditions or the density of the concrete.

Question 16

Describe the factors to be taken into account when determining and installing fire protection for compartment walls. (6 marks)

Examiner Feedback

Candidates often failed to appreciate that there were six marks available and presented only short responses to this question – it was common for candidates to reference only the expected penetrations through the wall and subsequent fire stopping required. Other factors such as local building regulations/codes, specified fire resistance period and whether the fire resistance was required from one or both sides were omitted.

Question 17

Describe four factors that influence the fire resistance of glazing systems when used as non-loadbearing compartment walls. (4 marks)

Examiner Feedback

Many candidates mis-read the question and wrote about different types of glazing rather than focusing on the factors that influence fire resistance. The types of factors that could have considered included:

- Maximum pane area
- Glass pane aspect ratio
- Type of glazing seal
- Frame material
- Frame design and construction
- Type and shape of beads
- Extent of glass edge cover (for example, for modified toughened soda-lime glass)
- Type location and application of fixings for both frame and beads
- Type of door materials and construction

Question 18

Describe six factors to be taken into account when selecting and installing fire stopping. (6 marks)

Examiner Feedback

Some candidates provided excellent responses to this question. However, others appeared to have no understanding at all of this area.

Question 19

One method of fire stopping is bags/pillows.

- a) Describe this method of fire stopping and explain the installation process. (4 marks)*
- b) Describe the circumstances when this would be an appropriate option and state why this is the case. (4 marks)*

Examiner Feedback

This question was usually answered well and most candidates were able to obtain at least half of the marks available.

Question 20

- a) Explain the purpose of fire-resisting ductwork. (2 marks)*
- b) Describe two methods of maintaining the fire resistance of compartment walls and floors when penetrated by ductwork. (2 marks)*

Examiner Feedback

Candidates often provided vague responses to part a) with few demonstrating understanding of the purpose of ductwork. Candidates should be aware that ducts are used for the distribution or extraction of air where there is a need to maintain the fire resistance of a wall or floor.

Part b) was usually answered well.

Question 21

- a) Explain the purpose of a damper. (2 marks)*
- b) One type of damper is a smoke control damper. Explain how this type of damper differs from standard fire dampers. (2 marks)*
- c) State two other types of damper. (2 marks)*

Examiner Feedback

Most candidates failed to explain the purpose of a damper with sufficient clarity or precision. Candidates should be aware that dampers are used in heating, ventilation and air conditioning

(HVAC) systems at boundaries to maintain the fire resistance of compartments. Part c) was usually answered well with most candidates able to obtain at least one of the marks available.

Question 22

Describe the factors to take into consideration when selecting and installing hinges. (6 marks)

Examiner Feedback

Most candidates scored at least half of the marks available for this question as most were able to identify factors such as regulations (usually CE marked and BSEN 1935 compliant), achieve intended fire rating – melting point at least 800°C, compatible with door-closing device, approved by third part certification body, compatible with mass and weight of the door, correct intumescent pads.

Question 23

State the checks that you would carry out when completing the installation of fire and smoke seals. (6 marks)

Examiner Feedback

This question was generally answered well and most candidates secured at least half of the marks available.

Date issued: August 2019