IFE Level 2 Certificate in Passive Fire Protection

Examiner Report – March 2020

Introduction

Candidates who sat the examination generally performed well with 71% of candidates achieving a pass. The pass mark for the examination is 50% (40 marks).

The most popular options for candidates were option 3 (Fire Stopping and Penetration Seals, Cavity Barriers, Ductwork and Dampers and The Building Envelope) and option 4 (Fire Resisting Doors, Industrial Shutters and Associated Hardware). In terms of options, candidates generally performed best on option 4 and least well on option 2 (Fire Resisting Walls, Floors and Ceilings).

Although many candidates passed the examination, there were few high scores. Candidates often provided only minimal information in responses and sometimes sections of the question were omitted from responses. It was common for candidates to attain only half of the marks available for most questions. Candidates should be aware that marks are awarded on the basis of one mark per valid point and therefore the number of marks shown on the examination paper for each question is an indication of the number of points required to secure all of the marks available.

Section 1 - Fire and Fire Protection

This section of the examination is mandatory for all candidates. There were 20 marks available and the average mark scored was 13 (65%).

Question 1

State the four elements of the fire tetrahedron. *(4 marks)*

Examiner Feedback

This question was usually answered well and most candidates were able to score at least three of the marks. Some candidates failed to identify chemical chain reaction as the fourth element.

Question 2

In relation to the principles of means of escape in case of fire, explain what is meant by:

a) Means of Escape *(2 marks)*

b) Occupancy *(2 marks)*

Examiner Feedback

Most candidates were able to explain the term “means of escape” and to secure both of the marks available. However, many candidates were unable to explain what is meant by “occupancy” in this context. Marks would have been achieved for explaining that occupancy refers to the number of people in a building and use to which building is put.

Question 3

Explain the difference between passive fire protection and active fire protection and provide one example of a passive fire protection measure and one example of an active fire protection measure. (6 marks)

Examiner Feedback

Candidates were usually able to explain what is meant by passive fire protection but active fire protection appeared to be less well understood. Many candidates confined their answer about active systems to systems built into the fabric, e.g. fire dampers, door closers or active fire curtains. Few answers mentioned suppression systems such as sprinklers and detection systems.

Candidates should be aware that active fire systems need special energisation or command signal to operate and are separately installed devices.

Question 4

One of the factors that affects the fire resistance of a building is insulation. Identify and describe two other factors. (4 marks)

Examiner Feedback

Most candidates correctly identified the other factors (stability/loadbearing capacity and integrity) but many failed to provide sufficient description to score marks for this element of the question. Candidates needed to provide a response to all parts of the question in order to secure all of the marks available.

Question 5

State two locations within a building that would normally be covered by emergency escape lighting. (2 marks)

Examiner Feedback

This question was usually answered well with most candidates securing both of the marks available.

Section 2 – Option 1: Fire Protection to the Structural Frame of the Building.

There were 30 marks available for this section of the paper. The average mark scored was 14 (47%). However, some candidates did score 19 or 20 marks.

Question 1.1

Identify three factors that affect the fire resistance of concrete frames. *(3 marks)*

Examiner Feedback

This question was often answered poorly with many candidates appearing to be unfamiliar with factors affecting the fire resistance of concrete frames. Factors that could have been identified in responses were:

- thickness of the concrete
- mixture/content
- load applied to it
- amount of cover/protection to the reinforcement

Question 1.2

Identify and describe three options for enhancing the fire resistance of timber. *(9 marks)*

Examiner Feedback

Candidates were usually able to identify options and secured marks for this. However, the question also asked for a description of the options and many candidates omitted to provide sufficient description to attain the additional marks. There were nine marks available for the question but many candidates fewer than half of the marks available.

Question 1.3

Describe how steel is affected by heat in a building fire and state the factors that affect the fire resistance of a steel frame. *(4 marks)*

Examiner Feedback

Most candidates correctly described how steel is affected by heat. However, few went on to state the factors that affect the fire resistance of a steel frame. As a result, many candidates failed to secure all of the marks available for the question.

Question 1.4

In relation to structural steel protection, describe the purpose and use of cladding systems made from fire-resisting boards or stone wool products. *(3 marks)*

Examiner Feedback

This question was often answered poorly and some candidates omitted it completely. Points that would have secured marks included:

- used for absorbing the heat of the fire to maintain the structural section temperature below that deemed as critical.
- generally specified to 'box in' the section.
- installed using mechanical fixings or adhesives.
- primarily designed for use in internal situations although some systems will allow for sheltered external applications.
- casings that have a suitable external finishing system may be considered for exterior use.

Question 1.5

In relation to materials used to enhance the structural resistance of steel, one method of application is Box. Name and describe the other two methods of application. (6 marks)

Examiner Feedback

This question was often answered poorly. Some candidates gave examples of different types of steel protection instead of describing the application methods. The application methods that should have been named and described were Profile and Solid.

Question 1.6

a) Explain why minor damage to intumescent coating systems should be repaired at the earliest opportunity. (2 marks)

b) State the process to follow when repairing damage to intumescent coating systems. (3 marks)

Examiner Feedback

Part a) was usually answered well with most candidates securing the two marks available.

Part b) was less well answered as few candidates provided points that were specific to the actual process. Points that would have secured marks included:

- if basecoat, cut back to firm edge
- use the same material as the primary installation to match to approved thickness
- if the primer coat is damaged, remove any corrosion products that may have formed and use a suitable primer
- if topcoat sealer is present, apply fresh sealer to match the original in line with manufacturer's published data
- follow the manufacturer/product specific instructions

Section 2 – Option 2: Fire Resisting Walls, Floors and Ceilings

This was the least popular option for candidates and also the option where the lowest marks were attained. There were 30 marks available and the average mark scored was 13 (43%). Only three of the candidate who selected this option scored marks of 15 or above. The highest mark attained for this option was 19.

Question 2.1

Explain the purpose of a compartment wall. *(3 marks)*

Examiner Feedback

Most candidates provided good responses and nearly all of the candidates who attempted the question secured all three marks.

Question 2.2

Two different types of fire-resistant floors are timber joist floors and composite floors. For each of these two types of floors explain how they may be affected by fire and describe the fire protection methods that can be applied to enhance fire resistance. *(8 marks)*

Examiner Feedback

This question was poorly answered. Most candidates were able to score one or two marks for each of the two different types of floor but few provided sufficient additional detail to score higher marks.

Question 2.3

State four different types of boards that may be used in partitioning systems designed to enhance the fire resistance of compartment walls. *(4 marks)*

Examiner Feedback

Few candidates were able to identify more than one or two different types of boards. This meant that few candidates achieved all of the marks available. The types of board which could have been identified included:

- gypsum plasterboard
- gypsum fibre board
- glass reinforced gypsum boards
- glass reinforced cementitious boards
- cellulose reinforced cement based boards
- calcium silicate boards
- steel faced boards

Question 2.4

a) State the purpose of active fire curtain barriers. (2 marks)

b) List four places where active fire curtain barriers may be found. (4 marks)

Examiner Feedback

In responding to part a), most candidates recognised that active fire curtain barriers are normally used to provide compartmentation and to protect means of escape.

Part b) asked candidates to provide four examples of places where active fire curtains may be found. Few candidates were able to identify more than one or two examples. Examples that could have been provided include:

- atriums
- lobbies and receptions
- openings in walls
- compartmentation
- stair wells
- lifts
- escalators

Question 2.5

a) Explain what is meant by "integrity rated glazing" and give an example of this type of glass. (3 marks)

b) Explain what is meant by "insulation rated glazing" and give an example of this type of glass. (3 marks)

Examiner Feedback

This question was poorly answered. Most candidates appeared to know the two types of glazing but were unable to provide sufficient detail in their description or to provide a correct example.

Question 2.6

Explain the factors that should be taken into account when selecting glazing seals in order to ensure that fire-resistant glazed systems operate effectively under fire conditions. (3 marks)

Examiner Feedback

This topic not well understood and few candidates scored high marks.

Examples of points that would have scored marks include:

- An incorrect choice of seals may cause premature failure.
- The seal must be capable of withstanding the temperatures experienced in fire without igniting, degrading catastrophically or losing strength and adhesion.

- The seals must be compatible with the other system components, especially the fire-resistant glass
- One seal must not be substituted for another without such appropriate evidence.
- Suitable seals can be either intumescent or non-intumescent based

Section 2 – Option 3: Fire Stopping and Penetration Seals, Cavity Barriers, Ductwork and Dampers and The Building Envelope

This was one of the two most popular options for candidates and candidates who chose this option usually scored well. There were 30 marks available and the average mark scored was 16 (53%).

There were several low scores but also some good scripts with candidates scoring 20 marks or above. The highest mark attained for this option was 23.

Question 3.1

a) Explain the purpose of fire stopping. *(2 marks)*

b) State three situations where fire stopping would be required. *(3 marks)*

Examiner Feedback

Part a) of the question was usually answered well. However, few candidates scored full marks for part b) as many omitted to provide three different examples of situations as required by the question.

Question 3.2

a) In relation to fire stopping and sealing systems, describe sealant/mastics. *(3 marks)*

b) State three places where sealant/mastics are used. *(3 marks)*

Examiner Feedback

Part a) was not answered well as few candidates provided sufficient detail to secure all three marks. However, responses to part b) were generally good with most candidates providing correct examples of places where sealant/mastics are used.

Question 3.3

a) Stone wool mineral products are supplied in a number of forms. State the forms that such products take and state the factors to take into account when installing these products. *(3 marks)*

b) State two examples of places where stone wool products may be used. *(2 marks)*

Examiner Feedback

Many candidates appeared to be unfamiliar with stone wool products. Few could identify the different forms that these products can take ie mats, batts or in pre-formed shapes and few demonstrated understanding of factors relevant to installation ie: some systems may require secondary support or fixing systems and further sealing or coating to maintain a resilient seal for long-tern movement

Question 3.4

a) Describe the purpose of ventilation duct systems and explain why it is important that fire precautions should be implemented in ventilation ductwork. (4 marks)

b) Other than ventilation duct systems, state two other types of ductwork systems. (2 marks)

Examiner Feedback

When responding to part a), candidates often provided only brief descriptions and this meant that they missed the opportunity to secure more of the marks available.

Part b) was usually answered well.

Question 3.5

a) Describe the operation of multi-blade fire dampers. (3 marks)

b) Name two other types of dampers. (2 marks)

Examiner Feedback

As per question 3.4a), candidates often provided only brief descriptions when responding to par a) and again missed the opportunity to secure more of the marks available.

Some candidates appeared to lack knowledge of other types of dampers as part b) was often omitted or, if it was attempted, only one example was provided.

Question 3.6

In relation to the construction and design of the building envelope, describe how the use of cladding can affect external fire spread. (3 marks)

Examiner Feedback

Candidates often cited (and received a mark for) flammable materials which increase fire load and the potential for fire spread. Few candidates identified other points such as:

- The space between the cladding and the existing façade can be a route for fire to propagate around the building.
- Poor fitting

- Many systems, for example rain screen claddings, are retrofitted to existing buildings to provide for weather protection and increased thermal efficiency and are not designed as part of fire protection

Section 2 – Option 4: Fire Resisting Doors, Industrial Shutters and Associated Hardware

This was one of the two most popular options for candidates and candidates who chose this option usually scored well. There were 30 marks available and the average mark scored was 18 (60%).

Although some candidates scored lower marks for this option, there were some very high scores with one candidate securing 28 of the marks available, another scoring 27 and several others scoring marks of 21 or above.

Question 4.1

Describe the purpose of fire doors. *(4 marks)*

Examiner Feedback

Candidates appeared to have sufficient basic knowledge to secure half of the marks available. However, few candidates had sufficient depth of understanding to attain all of the marks.

Question 4.2

Explain the difference between door assemblies and doorsets. *(4 marks)*

Examiner Feedback

Candidates appeared to lack depth of understanding. Most candidates provided a basic understanding that secured half of the marks available but few went on to provide the extra detail needed to attain all four marks.

Question 4.3

Describe the purpose and use of fire resisting rolling shutters. *(4 marks)*

Examiner Feedback

Candidates often appeared to lack understanding in relation to rolling shutters. Candidates should be aware that rolling shutters:

- form protection to an opening in a fire-resisting wall or floor or in a structure surrounding a protected shaft

- range in size from serving hatchways upwards
- usually operated on fusible or smoke-activated link connected to the fire alarm
- upon activation, the shutter will self-close under a controlled descent.
- should provide the same level of fire resistance as the wall in which they are installed

Question 4.4

State four components of a fire doorset/assembly and explain how each component contributes to fire safety in a fire. *(8 marks)*

Examiner Feedback

This question was usually answered well and candidates often secured a high proportion of the marks available.

Question 4.5

a) Explain why it is important that fire doors are installed correctly. *(1 mark)*

b) State five checks to be carried out prior to undertaking the installation of a fire door. *(5 marks)*

Examiner Feedback

This question was usually answered well with many candidates able to attain all of the marks available for both part a) and part b).

Question 4.6

State four points that should be taken into consideration when carrying out maintenance inspections on fire doors. *(4 marks)*

Examiner Feedback

This question was also answered well and many candidates were able to attain all of the marks available.

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