

L2CP



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

IFE Level 2 Certificate in Passive Fire Protection (603/3640/7)

Friday 13 March 2020

14.30 – 16.00

Instructions to Candidates

1. You **must** record all of your answers in the answer book provided.
2. This examination paper contains two sections. You must answer:
 - **ALL** of the questions in section one
 - Select **TWO** of the specialist options in section 2 and answer all of the questions within each of the specialist options chosen.
3. At the end of the examination, the answer book and this question paper will be collected by the invigilators. You will not be allowed to keep any examination stationery.
4. The time allowed for this examination is **One hour and 30 Minutes.**

Section 1

There are 20 marks available for this section of the examination. You should answer all questions.

1. State the four elements of the fire tetrahedron.

(4 marks)

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)

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)

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

(4 marks)

5. State two locations within a building that would normally be covered by emergency escape lighting.

(2 marks)

Section Two

This section of the paper is divided into four options. There are 30 marks available for each option.

Candidates should select TWO options from the following:

Option 1 - Fire Protection to the Structural Frame of the Building

Option 2 - Fire Resisting Walls, Floors and Ceilings

Option 3 - Fire Stopping and Penetration Seals, Cavity Barriers, Ductwork and Dampers and the Building Envelope

Option 4 - Fire Resisting Doors, Industrial Shutters and Associated Hardware

Note: no additional marks will be awarded where candidates respond to questions from more than two options.

[Please Turn Over]

Option 1 - Fire Protection to the Structural Frame of the Building

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

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

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)

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)

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)

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)

Option 2: Fire Resisting Walls, Floors and Ceilings

2.1 Explain the purpose of a compartment wall.

(3 marks)

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)

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)

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)

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)

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)

[Please Turn Over]

Option 3: Fire Stopping and Penetration Seals, Cavity Barriers, Ductwork and Dampers and the Building Envelope

3.1

a) Explain the purpose of fire stopping.

(2 marks)

b) State three situations where fire stopping would be required.

(3 marks)

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)

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)

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)

3.5

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

(3 marks)

b) Name two other types of dampers.

(2 marks)

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)



[Please Turn Over]

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

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

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

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

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

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)

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