

**L3CP**



**THE INSTITUTION OF FIRE ENGINEERS**  
Founded 1918 • Incorporated 1924

# **IFE Level 3 Certificate in Passive Fire Protection (603/3054/5)**

**Monday 8 October 2018**

**14.30 – 17.30**

## **Instructions to Candidates**

1. The time allowed for this examination is **THREE hours**.
2. You **must** record all of your answers in the answer book provided.
3. This examination paper contains two sections. You must answer **all** questions in both sections of the examination paper.
4. 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.

## Section 1

***There are 40 marks available for this section of the examination. You should answer all questions.***

1. Describe the fire tetrahedron and explain the implications for extinguishing fire.  
(4 marks)
  
2. Describe the five stages of the fire curve and the role that passive fire protection plays at each stage.  
(6 marks)
  
3. In relation to means of escape, define the following terms:
  - a) Place of reasonable safety  
(2 marks)
  - b) Travel distance  
(2 marks)
  
4. Internal compartmentation and fire resisting construction are examples of passive fire protection.
  - a) Explain why these components are described as passive fire protection.  
(2 marks)
  - b) Explain the role of passive fire protection when considering the approach to fire safety design.  
(2 marks)
  
5. Describe the content of a fire test report and explain the possible limitations of such a report.  
(4 marks)
  
6. Describe steps that building managers can take to ensure that fire protection provisions in their premises are maintained.  
(6 marks)
  
7. Identify three different types of sprinkler systems and outline a typical building/situation where each one would be installed.  
(6 marks)

8. Some passive fire protection systems depend on the operation of appropriate fire and smoke alarm systems to fulfil their intended role. Identify and describe three such systems.

(6 marks)

## Section Two

***There are 80 marks available for this section of the examination. You should answer all questions.***

9. Explain two different ways of flame retarding timber.

(6 marks)

10. Describe the factors that affect the loadbearing capacity of the following building support systems in fire:

a) structural steel

(2 marks)

b) reinforced concrete

(2 marks)

c) timber

(2 marks)

11. Explain how intumescent coatings work and how they can contribute to the loadbearing capacity of steel frames.

(6 marks)

12.

- a) Explain the difference between box, profile and solid application of fire protection to steel.

(2 marks)

- b) Describe the role of fire resistant boardings when protecting structural steel sections.

(2 marks)

- c) Describe any two different types of materials used in the manufacture of fire resistant boardings.

(2 marks)

**[Please Turn Over]**

13. State and explain the three main criteria that materials are assessed against when undergoing fire resistance testing as part of BS476. (6 marks)
14. What are the two main purposes of compartment walls and floors? (2 marks)
15. Generally, fire resistant glazing falls within three tested classifications. Explain how each of the classifications are identified and how they differ from each other. (6 marks)
16. Explain the difference in design and operation of curtain fire dampers and intumescent fire dampers. (6 marks)
17. Ventilation ductwork systems may offer little or no protection against fire spread. Explain three ways of maintaining the fire resistance of walls and floors penetrated by ductwork. (8 marks)
18. Identify five different situations where fire stopping would be needed and describe an appropriate solution. (10 marks)
19. Explain the purpose, construction and design of a fire barrier system and explain how they differ from cavity barriers. (6 marks)
20. State six components of a fire doorset or assembly and explain their role in maintaining fire performance. (6 marks)
21. Explain the design, purpose and operation of a fire shutter. (6 marks)