

**L3CP**



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

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

**Friday 15 March 2019**

**10.30 – 13.30**

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

\_\_\_\_\_

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

a) evacuation time (2 marks)

b) occupancy (2 marks)

\_\_\_\_\_

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)

\_\_\_\_\_

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

\_\_\_\_\_

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)

\_\_\_\_\_

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)

\_\_\_\_\_

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

\_\_\_\_\_

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)

\_\_\_\_\_

<b>Section Two</b>
--------------------

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

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)

\_\_\_\_\_

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)

\_\_\_\_\_

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)

\_\_\_\_\_

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)

\_\_\_\_\_

**[Please Turn Over]**

13. Describe the process of impregnation treatments used for timber and wood-derived building materials and state the limitations with this type of treatment. (5 marks)

---

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

---

15. a) Explain how composite floors behave in fire. (4 marks)

b) Describe two factors affecting the fire resistance of concrete. (2 marks)

---

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

---

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

---

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

---

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)

---

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)

---

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)

---

22. Describe the factors to take into consideration when selecting and installing hinges.

(6 marks)

---

23. State the checks that you would carry out when completing the installation of fire and smoke seals.

(6 marks)

---