

L3CP



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

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

Monday 12 October 2020

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.

Fire and Fire Protection

1.
Describe the fire tetrahedron and explain the implications for extinguishing fire. (6 marks)

2.
Explain the risks to human health associated with the inhalation of smoke. (5 marks)

3.
State four factors that affect human behaviour when faced with a threat of fire in a building. (4 marks)

4.
The primary function of passive fire protection is to contain fire and smoke within a given fire compartment for a prescribed period of time. Using examples, explain how passive fire protection measures contribute to limiting the spread of fire. (4 marks)

5.
In relation to fire resistance, explain what is meant by the term “stability” and explain how passive fire protection contributes to maintaining stability. (5 marks)

6.
Describe the content of a fire test report and explain the possible limitations of such a report. (6 marks)

7.

Passive fire protection measures should be taken into account when planning building projects. One reason for this is to ensure that the correct checks are carried out at the right times. Identify and explain two other reasons.

(4 marks)

8.

a) Explain what is meant by the term “active fire protection”.

(2 marks)

b) Describe two different types of fire suppression equipment available within a building and explain when it would be used.

(4 marks)

[Please Turn Over]

Section Two

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

Fire protection to the structural frame of the building and fire retardant coatings

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 what is meant by “section factor” and state the formula.

(3 marks)

b) Explain how section factor affects the required thickness of applied fire protection.

(2 marks)

11.

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

(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)

13.

Describe the limitations associated with the impregnation treatments used for timber and wood-derived building materials.

(5 marks)

Fire resisting walls, floors and ceilings and fire-resistant glazing

14.

a) Describe three functions of fire resisting partitions.

(3 marks)

b) Describe three types of boards that may be used in the construction of fire resisting partitions.

(3 marks)

15.

Describe how composite floors are constructed and explain how this affects how they behave in fire.

(4 marks)

16.

Describe the factors affecting the degree of fire resistance required of compartment walls.

(4 marks)

17.

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)

[Please Turn Over]

Fire stopping and penetration seals, cavity barriers, ductwork and dampers and the building envelope

18.

Explain the purpose and use of cavity barriers and describe the two different types of cavity barriers.

(6 marks)

19.

Explain the factors to be considered when selecting and installing fire stopping for ductwork and dampers that penetrate a fire-resistant barrier.

(4 marks)

20.

In relation to fire stopping and sealing systems, describe the composition and use of:

a) pre-formed elastomeric seals

(4 marks)

b) foam

(4 marks)

21.

a) Explain the purpose of a damper.

(2 marks)

b) Describe the operation of intumescent dampers.

(4 marks)

Fire resisting doors, industrial shutters and associated hardware

22.

Describe the purpose and operation of devices designed to hold open fire resisting doors.

(6 marks)

23.

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

(6 marks)
