

L3CP



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

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

Monday 7 October 2019

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.
 - a) State the elements of the fire tetrahedron. (4 marks)

 - b) Explain the term 'exothermic reaction'. (1 mark)

2. In relation to the process of fire development, explain what is meant by the term 'flashover'. (4 marks)

3. Describe two ways in which regular fire drills and alarm tests can affect behaviour in a fire. (2 marks)

4.
 - a) Define the term 'means of escape'. (2 marks)
 - b) Define the term 'travel distance'. (2 marks)

5. State the primary function of passive fire protection. (2 marks)

6. In relation to fire resistance, explain what is meant by the term 'integrity' and describe the factors that affect integrity. (4 marks)

7. Describe the content of a fire test report and explain the possible limitations of such a report. (5 marks)

8. Explain why it is important to consider passive fire protection as part of the initial design and brief for a building.

(4 marks)

9. Identify and briefly describe three different types of fire suppression equipment available within a building.

(6 marks)

10. Explain what is meant by the term 'responsible person' in the context of fire safety and state three of the activities that a responsible person should carry out.

(4 marks)

Section Two

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

Fire protection to the structural frame and retardant coatings

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

a) reinforced concrete

(3 marks)

b) timber

(3 marks)

12. One of the issues to be taken into account when determining the choice of fire protection system for a particular purpose is the level of fire rating required. Identify four other factors that would be considered.

(4 marks)

[Please Turn Over]

13.

a) Describe the cementitious-based coating systems that can be applied to structural steel sections.

(2 marks)

b) Describe the factors to be taken into account during the application of cementitious-based coatings in order to ensure that the process is effective and the outcome meets the required standards.

(4 marks)

14. Explain how intumescent coatings work and how their activation can contribute to the load bearing capacity of steel frames.

(4 marks)

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

(4 marks)

Fire resisting walls, floors and ceilings and fire resistant glazing

16. Define fire-resisting suspended ceilings and describe the materials from which they are generally constructed.

(5 marks)

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

(4 marks)

18. Describe how non-fire rated glass behaves in fire.

(4 marks)

19. Describe the performance considerations when using metal frames to support fire resistant glazing.

(4 marks)

20. Active fire curtain barriers are normally used to provide compartmentation and to protect means of escape. Identify three locations where active fire curtain barriers may be installed.

(3 marks)

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

21.

a) Explain the purpose of fire stopping.

(2 marks)

b) State four factors to be considered when selecting and installing fire stopping in a building.

(4 marks)

22. State three methods to fire-stop and seal horizontal pipe penetration through a fire resisting wall or floor.

(3 marks)

23. In relation to fire stopping and sealing systems, explain where and how plugs/blocks would be used.

(5 marks)

24. In relation to the methods used to maintain the fire resistance of walls and floors penetrated by ventilation ducts, explain the features and limitations of protection using fire resisting ductwork.

(4 marks)

25. Identify and describe three different types of damper.

(6 marks)

[Please Turn Over]

Fire resisting doors, industrial shutters and associated hardware

26. Explain the purpose and operation of air transfer grills in fire doors.

(4 marks)

27.

a) Describe four checks that would be carried out prior to installing the door frame for a fire door.

(4 marks)

b) Describe four checks that should be carried out in relation to the intumescent fire and smoke seals used on a fire door.

(4 marks)
