

L3D2



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

IFE Level 3 Diploma in Fire Science and Fire Safety

Unit 2: Fire Safety (F/505/6006)

Thursday 14 March 2019

10.30 – 13.30

Instructions to Candidates

1. The time allowed for this examination is **THREE** hours.
2. Candidates must answer **SIX** questions from the total of **EIGHT** questions set for this examination.
3. All questions carry equal marks and may be answered in any order. Candidates should follow the instructions provided in the question when composing their answers.
4. Candidates should record all of their answers in the answer book provided.
5. The question paper must be handed in with the answer book.

Question 1

- a) Prepare a checklist of fire safety issues to be covered in the training of staff working in a large factory or warehouse premises. (14 marks)
- b) Staff who are expected to undertake the role of fire marshals or fire wardens are given a higher level of fire safety training than the average member of staff in order for them to be responsible for the fire safety within a designated part of a premises. Outline what would be covered in this higher level of fire safety training. (6 marks)
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Question 2

- a) State the purpose of 'E' type fire resisting glazing and provide two examples of this form of glazing technology. (5 marks)
- b)
- i) Explain what is meant by the term 'fire retardant substances'. (2 marks)
 - ii) Explain how fire retardant substances work to stop the burning process. (3 marks)
- c) State the two objectives achieved by providing fire resisting compartment walls and/or floors in buildings. (4 marks)
- d) Where ventilation ducts pass through a compartment wall or floor there are three methods that can be used to maintain the integrity of the wall or floor. Outline these three methods. (6 marks)
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Question 3

- a) Describe the situations when and/or where is it appropriate to utilise visual alarm signals as part of an electric fire warning system. (6 marks)
- b) Describe the benefits of smoke and heat exhaust venting as part of the means of escape strategy for a large modern building. (6 marks)
- c) Outline the operating principles of a smoke and heat exhaust ventilation system. (8 marks)
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Question 4

- a) State the objectives of fire safety advice provided for property and business continuity purposes. (2 marks)
- b) Outline the primary means of achieving those objectives in order to improve property and business continuity protection. (6 marks)
- c) State five factors that influence an evacuation strategy for a building. (5 marks)
- d)
- i) Identify two human behavioural factors that should be considered when planning evacuation and means of escape from a building. (2 marks)
 - ii) Describe five ways in which building design and evacuation strategies can assist in aiding evacuation. (5 marks)
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Question 5

- a) Explain why hydraulic hose reels are suitable as the first line of attack in buildings as an alternative to portable fire extinguishers. (5 marks)
- b) What are deluge systems designed to protect and how do they function? (3 marks)
- c) State the design principles of a recycling sprinkler system. (2 marks)
- d) Describe the design and method of operation of five types of sprinkler head. (10 marks)
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Question 6

You are required to carry out a fire risk assessment on a horse stabling building. Describe the control measures that should be considered in relation to the risks specific to this type of premises. (20 marks)

[Please turn over]

Question 7

- a) What do the abbreviated terms ASET and RSET denote? (2 marks)
- b) Define the terms ASET and RSET. (4 marks)
- c) A common fire engineering approach to the analysis of the conditions in a building in the event of a fire is the ASET vs RSET comparison. What is the basic aim of this approach? (2 marks)
- d) Explain what is meant by passive fire protection. (2 marks)
- e) Outline the measures that can be taken to reduce the hazards and risks of 'dead end' conditions in buildings. (10 marks)
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Question 8

- a) For each of the following, describe when it would be in use and provide an example of the types of places where each would be used:
- i) maintained emergency escape lighting (2 marks)
 - ii) non-maintained emergency escape lighting (2 marks)
- b) State the areas of a building that would normally be covered by emergency escape lighting. (10 marks)
- c) The standby batteries of emergency escape lighting have duration periods of around 180 minutes or around 60 minutes. Describe the circumstances when it would be appropriate to install a system with:
- i) a 180-minute duration standby battery (4 marks)
 - ii) a 60-minute duration standby battery (2 marks)
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