

# L3D4



THE INSTITUTION OF FIRE ENGINEERS  
Founded 1918 • Incorporated 1924

**IFE Level 3 Diploma in Fire Science and Fire Safety**

## **Unit 4: Aviation Fire Operations (R/505/6009)**

**Thursday 8 March 2018**

**14.30 – 17.30**

### **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) In relation to military fast jets, state the three principal designs for cockpit canopies. (3 marks)
- b) Describe the steps that should be followed when rescuing aircrew from the cockpit of a military jet. (12 marks)
- c) Describe five hazards to be taken into account when rescuing aircrew from the cockpit of a military jet. (5 marks)
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### Question 2

- a) Describe the design and features of an undercarriage system as fitted to most civil passenger aircraft. (5 marks)
- b) Describe the hazards that may be encountered by the Airport Rescue and Firefighting Services (ARFFS) when dealing with an incident involving undercarriages and state the precautions to be implemented. (15 marks)
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### Question 3

Explain the "Critical Area Concept" as applied for the rescue of the occupants of fixed winged aircraft. Include all relevant formulae to be used in your answer. (20 marks)

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### Question 4

- a) Describe the use of the following two areas of an airport. For each area, identify two potential hazards:
- i) apron (3 marks)
- ii) maintenance facilities (3 marks)
- b) Describe the safety management measures to be adopted during the fuelling and de-fuelling of fixed wing aircraft with passengers on board. (14 marks)
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### Question 5

- a) Describe the purpose of an Auxiliary Power Unit (APU) as fitted to most commercial aircraft and state the most likely location for this. (8 marks)
- b) Many polymer composites are used in the construction of modern commercial aircraft.
- i) Give three examples of composite materials used on modern aircraft. (3 marks)
  - ii) Describe three benefits of using composites in aircraft construction. (3 marks)
  - iii) Describe the potential hazards associated with composite materials. (6 marks)
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### Question 6

- a) When developing a tactical plan, the Incident Commander needs to identify and prioritise objectives. State six factors that the Incident Commander would take into account. (6 marks)
- b) Identify the factors that the Incident Commander would take into account in determining control measures and safe systems of work. (8 marks)
- c) Describe six reasons why the Incident Commander needs to keep the tactical plan under review throughout the incident. (6 marks)
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### Question 7

- a) Describe the training resources that should be provided for the Airport Rescue and Firefighting Service (ARFFS) to maintain its competency. (6 marks)
- b) Outline the training scenarios that should be provided by an aircraft simulator. (6 marks)
- c) Outline the general areas of training specific to personnel required to provide rescue and firefighting for civilian helicopters. (8 marks)
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**[Please turn over]**

### Question 8

a) Pre-planning for emergencies enables an effective and fast response should the emergency arise. Explain why each of the following components is important and describe the information that should be included in the plan:

i) airport location and topography (4 marks)

ii) access (4 marks)

iii) communications (4 marks)

b) The plan should include all suitable and available supplies of water both on, or adjacent to, the airfield. Identify the water sources which may be included in such plans.

(4 marks)

c) The plan must be tested regularly to ensure it is adequate in the event of an emergency. Describe the elements that should be taken into account when setting up exercises to test the effectiveness of the plan.

(4 marks)

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