

L3D4



THE INSTITUTION OF FIRE ENGINEERS
Founded 1918 • Incorporated 1924

IFE Level 3 Diploma in Fire Science and Fire Safety (VRQ)

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

Thursday 12 March 2015

14:15 – 17:15

Instructions to Candidates

1. The time allowed for this examination is **THREE** hours.
2. Candidates are to answer **SIX** questions from the total of **TEN** 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.

1

Detail the general apron (or ramp) safety management measures to be adopted during the fuelling and de-fuelling of an aircraft with passengers on board.

(20 marks)

2

In relation to fixed wing aircraft, fully explain the concept of "Critical Area" including in your answer the formulas used.

(20 marks)

3

a) State the five zones in a typical jet engine.

(5 marks)

b) Describe the hazards that may be encountered when dealing with fires in aircraft engines and describe the tactics and techniques to be used when dealing with this type of incident.

(15 marks)

4

The command and control of an aircraft accident will involve all of the emergency services. Three levels of command may be implemented. Describe the roles and responsibilities of each level of command.

(20 marks)

5

a) State the information which should be included on "Airport Crash Maps".

(4 marks)

b) The Emergency Planning Committee for an airport consists of both on- and off-airport agencies.

i) List the agencies that will be represented on this committee.

(8 marks)

ii) Briefly describe the responsibilities of the committee and give examples of the tasks undertaken by the committee.

(8 marks)

6

In relation to military "Fast Jets":

- a) List the principal types of cockpit canopy design and explain the methods of entry into a cockpit canopy. (6 marks)
 - b) Describe the approach and positioning in relation to a military aircraft incident. (6 marks)
 - c) Identify and explain four hazards specific to an incident involving a military aircraft. (8 marks)
-

7

Explain the factors specific to an incident involving a civilian aircraft carrying cargo that an Incident Commander would need to take into account when dealing with an incident of this type.

(20 marks)

8

Polymer Composite Materials / Man Made Mineral Fibres (MMMFs) are used extensively in the construction of modern aircraft.

- a) Describe the advantages of using these materials for aircraft manufacturers and give examples of where these materials may be found in civil fixed and rotary winged aircraft. (9 marks)
 - b) Explain the tactics for the Airport Rescue and Fire Fighting Services (ARFFS) when responding to an aircraft accident involving an aircraft known to have composites within its construction. (11 marks)
-

9

- a) Describe what is meant by "liaison" in response to aircraft incidents. (8 marks)
 - b) Describe the areas of access that should be included in liaison visits and detail the information which should be included in local plans at airports for the responding Fire and Rescue Service. (12 marks)
-

[Please turn over]

10

- a) List seven main properties of firefighting foams. (7 marks)
- b) What is meant by the "induction rate"? (5 marks)
- c) Describe the five ways in which foams can help to knock down and extinguish fuel fires. (5 marks)
- d) There are the three main ingredients of finished foam whose amounts can be varied and so influence the behaviour of the foam when it is applied to a fire. What are these three ingredients? (3 marks)
-