

IFE Level 3 Diploma in Fire Safety and Fire Science

Unit 4 – Aviation Fire Operations

Examiner Report – March 2018

Introduction

45% of candidates attained a Pass. Nearly half of the candidates that passed the examination attained either a C or a B grade.

Candidates performed best on question 8. They performed least well on questions 1 and 7.

A number of candidates either misread questions or, due to lack of familiarity with the information required chose to present alternative information with which they were more familiar. This meant that a great deal of irrelevant information was presented in responses. Marks can only be provided when candidates provide material that answers the question asked so a great deal of the information provided did not attain marks as it was not relevant to the specific question.

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)*

Examiner Feedback

Part a) was often answered well as most candidates were able to state the designs required ie: Rear Hinge Canopy, Side Hinge Canopy (Clamshell) and Sliding Canopy.

Candidates often provided only brief responses to part b). However, there were 12 marks available so the lack of relevant points provided limited the marks that could be attained. Candidates who provided the detail of equipment to be released (eg oxygen mask, harnesses etc) and who considered safety issues (eg being aware of possible injuries, ensuring all lines and connectors are released before lifting, removing the occupant carefully ensuring sufficient personnel to take the weight and all working surfaces are secure etc) were able to attain high marks.

Part c) was poorly answered with candidates often referring only to weapon systems and failing to consider the rescue context. There were many points which would have gained marks such as:

- the canopy will be extremely strong and heavy and this will present hazards where entry has to be forced
- the ejection seat presents a dangerous explosive hazard to persons entering or leaving the cockpit
- as the rescue involves operating in very confined spaces, switches can be touched accidentally
- if ladders are used in the lift out they must be properly secured to avoid slippage.

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)*

Examiner Feedback

Part a) was often answered well with many candidates familiar with the systems involved.

Candidates often provided only brief responses to part b) instead of providing the detailed assessment of the situation required. Some candidates only listed points rather than providing the additional information needed to secure further marks. Most candidates referenced fuel and passengers but few other factors were considered. High scoring candidates also considered hazards associated such as structural collapse, debris, engines, brake dust, fractured hydraulic lines and fusible plugs. Some candidates either failed to address the precaution element of the question or provided only generic points such as appointing a safety officer rather than focussing on implementing measures to protect against the specific hazards associated with the context.

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)

Examiner Feedback

This question was the least popular option for candidates. Candidates who were familiar with the Critical Area Concept were able to attain high marks. However, many candidates provided only limited responses and therefore secured very low marks.

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)*

Examiner Feedback

Part a) was generally poorly answered with few candidates able to identify relevant hazards in either of the areas specified. Examples of potential hazards were congestion due to lots of moving vehicles, risks related to fuel due to fuelling activities (apron), storage of flammable and hazardous chemicals along with hot cutting operations and fabrication of aircraft components (maintenance facilities).

Part b) was often answered well. However, as in other questions, candidates presented their points briefly and the failure to add additional depth/detail meant that they lost the opportunity to attain the additional marks available.

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)*

Examiner Feedback

This question was the most popular option for candidates.

Candidates generally performed well on part a) with the purpose of an APU being well understood.

Part b) was less well answered. Candidates were generally able to identify at least one composite material in response to part i) – materials which could have been provided included: carbon, glass, Aramid (Kevlar), graphite, boron, GLARE™ (GLAss REinforced Laminar).

Whilst candidates could often identify benefits (eg lightweight, easy to mould, strength to weight ratio) in response to part b)ii), few candidates could describe hazards in sufficient detail to secure more than one or two marks. Candidates often cited toxicity but did not explore issues such as particulates (fibres and dusts), conductivity or change in structural strength (effects upon rescue operations). Candidates rarely explored issues around the effect of heat/fire on materials or the combined effects of different materials eg up to thirty different

polymer composite materials can be used within the construction of the aircraft and they may react differently.

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)*

Examiner Feedback

This question was focussed on incident command. It was not a popular option for candidates. Candidates that responded to the question often failed to demonstrate basic understanding of incident command with the majority of candidates achieving fewer than 8 marks.

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)*

Examiner Feedback

Responses to this question were generally poor with candidates failing to demonstrate a thorough comprehension of the areas of knowledge and understanding required by those operating in ARFFS roles. Few candidates attained high marks.

Examples of the type of training resources that could have been referenced in response to part a) include: live fire training facilities, aircraft simulator commensurate with the types of aircraft operating at the aerodrome, classroom(s), trainers and vehicles, media and equipment (including servicing and maintenance facilities).

Examples of the types of training scenarios that could have been provided in response to part b) include: aircraft external fires, aircraft internal fires, gaining entry, search and rescue, specialist equipment drills, command and control etc.

Candidates often performed best on part c) and identified relevant structural factors and hazards associated with helicopters as forming the basis for training areas.

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)*

Examiner Feedback

This was a popular option for candidates and many good responses were received. Part a) was often answered particularly well.

Part c) was answered least well as many candidates did not take into account the purpose of testing the plan so therefore failed to appreciate the need to reflect realistic scenarios and to engage key partners.