

Level 3 Certificate in Fire Science, Operations, Fire Safety and Management (All Examinations)

Examiner Report on March 2017 Examinations

Introduction

As in previous examination sessions, candidates generally performed least well on the Fire Engineering Science and Fire Safety examinations.

Most candidates attained a higher proportion of the marks available for the multiple choice element of the question papers than they did for the short answer element of the question papers. Candidates should be aware that they need to demonstrate depth and breadth of understanding in order to attain high marks on the short answer element of the paper.

Fire Engineering Science (L3C1)

General

Candidates performed better than in the October 2016 examination with 53% of the candidates who attempted the examination achieving a Pass. Candidates usually performed slightly better on the multiple choice element of the examination with most candidates achieving just over half of the marks available; however, most candidates achieved fewer than half of the marks available for the short response questions which had a negative impact on the final mark achieved.

Multiple Choice

Although most candidates achieved at least half of the marks available on the multiple choice section of the examination, few candidates attained high marks. It appeared that many candidates had focussed on only a few sections of the syllabus and that many lacked depth of understanding. Candidates should be aware that all sections of the syllabus will be tested in the examination.

Many candidates performed well on questions involving straightforward mathematical calculations. However, many errors were made in calculating the capacity of a given length of hose and many candidates were unable to work out the length of the third side of a triangle. Errors were also made in calculating density, identifying the function of a nozzle and calculating the jet reaction of water leaving a nozzle in the given context. Few candidates demonstrated understanding of specific heat capacity.

Candidates appeared to have good understanding of chemistry in relation to fire with most candidates performing well on questions addressing this area of the syllabus.

Short Answer Questions

This section of the paper was often completed poorly. The questions on work done, atmospheric pressure and electricity were particularly poorly answered with many candidates failing to demonstrate knowledge at the appropriate level. Few candidates attained high marks for this section of the paper.

Work done: This question was not answered well. Few candidates were able to define the term and fewer were able to state the formula used to express work done.

Methods of heat transmission: Most candidates performed well on this question with nearly all candidates able to name the three methods. Some candidates were unable to give examples of each type of heat transmission and this limited the marks that they could attain.

Atmospheric pressure: Many candidates confused atmospheric pressure with gravity and this meant that their responses secured few, if any, marks. Few candidates were able to explain the term atmospheric pressure and fewer were able to explain how atmospheric pressure affects the pumping of water from an open source. Candidates should be aware that atmospheric pressure is the force exerted on a surface by the weight of the air above.

Dry Chemical Powders: Candidates were usually able to give an example of occasions when it would be appropriate to use dry chemical powders. However, few were able to explain how dry chemical powders work in extinguishing a fire. There were four marks available for this element of the questions so those candidates that did not attempt this element lost the opportunity to attain four marks.

Electricity: As in previous examinations, candidates often performed least well on this subject. Some candidates were able to define the terms Ampere and Ohm correctly. However, few candidates appeared to know that a Volt is a unit of electrical potential or motive force.

There were many errors in carrying out the calculations with many candidates unable to identify and use an appropriate formula for the given task. Those candidates that did use the correct formula sometimes transposed figures incorrectly and sometimes omitted to show the units of measurement used. Many candidates omitted to complete this element of the question at all; as there were five marks available for this element of the question, these candidates lost the opportunity to attain five marks.

Fire Operations (L3C2)

General

Standards were good with 71% of candidates achieving a Pass.

Candidates often attained a Pass due to their high level of performance on the multiple choice element of the paper which compensated for a poorer level of performance on the short written answer element of the paper.

Multiple Choice

Most candidates performed well on the multiple choice section of the examination with the majority of candidates achieving well over half of the marks available for this section.

Most candidates appeared to have some understanding of all areas of the syllabus. However, many candidates made errors in identifying appropriate use of horizontal ventilation, recognising factors related to the use of branch pipes and in identifying the device used to check for background radiation.

Short Answer

There were many good responses to this element of the question and some candidates attained high marks.

As in previous years, candidates often failed to address the specific and full requirements of the question; where answers were not fully focussed on the question, few, if any, marks were attained. Question 21 (which related to pre-planning) and question 25 (which related to the use of high expansion foam) were particularly poorly answered.

Pre-Planning for a possible fire at a museum: Candidates who appreciated that the key words in the question were “*pre-planning*” and “*possible fire*” generally attained high marks for this question. Some candidates, however, failed to appreciate the pre-planning context; these candidates often provided largely irrelevant answers as they approached the question from the point of view of either an incident commander at an actual incident or as a fire safety officer advising on safety measures.

Salvage operations: Many candidates attained high marks for their response to this question as most candidates were able to identify actions such as minimising water, removing the goods, closing doors, managing run-off etc. Some candidates focussed on only one type of action (usually minimising water damage) and listed different ways of minimising water rather than identifying other approaches.

Fire in residential apartments: most candidates were able to achieve at least half of the marks available for this question. However, there was often a great deal of repetition of actions in responses with candidates finding numerous ways to say the same thing; for example, listing all of the different equipment (as eight separate points) rather than taking a higher level approach and identifying the need to secure appropriate resources for the task.

Failure of Water Supply: this question was generally answered well and most candidates were able to achieve at least half of the six marks available for identifying the possible reasons for a failure of water from a pressure-fed supply.

High Expansion Foam: this question was not answered well. Few candidates were able to describe the difficulties associated with this type of foam; examples of points that could have been covered included limited protection, slow flowing and effect of the insulation properties on heat and acoustics which can cause disorientation. Few candidates were able to identify occasions when this type of foam would be used.

Fire Safety (L3C3)

General

50% of candidates achieved a Pass. This level of attainment was in line with previous examinations. Candidates generally performed better on the multiple choice element of the examination than on the short written answer element.

Multiple Choice

The majority of candidates attained at least half of the marks available. Candidates performed particularly well on questions addressing elements of structure, drenchers, inert gas firefighting installations and fire service access for firefighting purposes.

Questions addressing the operation and/or structure of equipment were answered least well. Errors were made in responding to questions addressing actions to empty a charged dry riser, types of fixed foam installations, detectors containing amplifiers and components of a sprinkler systems.

Short Answer

Few candidates attained high marks for this section of the question.

Component parts of a floor: Few candidates described the component parts of a floor. These parts were load bearing (eg joists), upper surface (finish) and lower surface (ceiling of the floor below). Although some candidates mentioned joists and surface, few demonstrated understanding of the component parts and few attained all of the marks available for the question.

Fire resisting glass: few candidates were able to describe three types of fire resisting glass in common use. Most candidates identified wired glass and laminated glass but few attained the additional marks available for describing these correctly.

Operation and effects of medium velocity water spray systems: few candidates demonstrated understanding of medium velocity water spray systems and many candidates wrote at length about sprinkler systems rather than about medium velocity water spray systems. Candidates often failed to follow the instructions in the question and provided only half of the information required.

Smoke and heat exhaust ventilation systems (SHEVs) – this question was generally answered well and many candidates attained full marks for their description of the benefits of SHEVs.

Flame detectors: there were very few good responses to this question. The majority of candidates failed to appreciate that that these type of detectors respond to radiation emitted by the flames of a fire. Few identified infrared detectors or ultra-violet detectors as examples of flame detectors.

Reducing false alarms: there were few good responses to this question. The majority of candidates failed to appreciate that issues such as siting, selection, good management and regular maintenance were key in reducing false alarms.

Factors affecting the means of escape: Most candidates were able to identify three factors but few candidates explained the factors in sufficient depth to attain the additional marks available for explanations.

Management and Administration (L3C4)

General

Standards were high with 73% of candidates passing the examination.

The majority of candidates who achieved a Pass attained between 25 and 35 marks; few candidates achieved over 40 marks. The main reason for this was that responses to the Short Answer section of the paper often lacked depth; candidates often demonstrated some basic understanding but then failed to apply this or to expand their responses as required by the question. In addition, candidates often provided a great deal of irrelevant information and/or failed to answer the questions as set.

Most candidates performed better on the multiple choice section of the examination than on the Short Answer section of the question paper and attained a higher proportion of the marks available when responding to multiple choice questions.

Multiple Choice

Most candidates performed well on the multiple choice element of the paper and achieved at least half of the marks available.

Most candidates appeared to have some understanding of all areas of the syllabus. The main areas of weakness appeared to be understanding of business structure, understanding of motivational theory and understanding of budgetary control at local levels within an organisation.

Short Answer

The majority of candidates achieved at least half of the marks available for this section of the paper. However, few candidates attained more than 20 of the 30 marks available.

As in previous examinations, candidates generally performed best on the questions focussed on people management (particularly those addressing motivation and delegation) and performed least well on the question that addressed business issues such as the importance of organisation objectives and the reasons for setting budgets at department level.

Organisational structure chart: Many candidates reiterated the title of the chart (organisation structure) as their response to the question about the purpose of the chart rather than explaining about the role of the chart in illustrating the chain of command and the relationship between departments. Some candidates provided irrelevant information such as descriptions of roles and responsibilities.

Organisational Objectives: Most candidates identified the importance of objectives in ensuring that everyone knew what needed to be achieved. However, few candidates attained more than one mark as few focussed their response at organisation level; eg few recognised the way in which objectives enabled organisations to set priorities, focus resources, share out tasks, establish measures of success etc.

Factors affecting staff motivation: Most candidates provided good responses to this question and attained at least half of the marks available. Some candidates provided only a list/brief description of factors rather than following the instruction in the question to **explain** how the factor affected motivation; for example, it was common for candidates to describe work conditions such as pay and facilities but then omit to describe why/how these factors affected motivation.

Effective delegation: Most candidates identified the importance of delegating the task to the right person and the need to communicate the task clearly. It was common to omit factors such as ensuring that resources were available, that support was provided and that the task was realistic in the context of the individual's existing workload.

Capital Expenditure: Most candidates were able to provide examples of types of capital expenditure. Some candidates did not explain that capital expenditure relates to investment in objects that are expected to last for a long time and which could potentially be re-sold.

Reasons for setting budgets for departments: This question was generally answered poorly as most candidates focussed on the role of budgets in general terms rather than the relationship between the budget and the department. As a result, few candidates attained all four of the marks available. Few candidates made the link between the work of the department and its specific financial needs and few considered accountability issues.

Training Plans: Many candidates went down the route of explaining the acronym SMART and wrote (often at length) in generic terms about plans being specific, time-bound etc; these candidates often failed to link their response back to the question and therefore did not attain marks eg it was common to say that training should be "specific" but to omit to explain what factors determined whether or not something was "specific" in this instance. Candidates who attained high marks for this question considered issues such as the current skills level of the team member compared to the skills needed to carry out the job role, the learning style of the individual and its implications for the nature of training programme, the costs of the training compared to the benefits to be attained etc.

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