



Question Papers and Report of the Assessors
and the Examiners for the Qualifying
Examination for
Promotion to the Rank of Sub-Officer
Part 1: Written Examination 1999

QUESTION PAPERS AND REPORT OF THE ASSESSORS AND EXAMINERS FOR THE
QUALIFYING EXAMINATION FOR PROMOTION TO THE RANK OF SUB-OFFICER.
PART I WRITTEN EXAMINATION 1999

GENERAL COMMENTS

The fourteenth examination conducted by the Fire Services Examinations Board produced a pass rate of 30.27% from 1546 candidates who sat the examination. These figures indicate a reduced number of candidates taking the examination and a reduced number of successful candidates, when compared to the figures of the previous year. As a result of the flexible system of taking the examination, 865 candidates are indicated as having obtained a pass in one or more of the three papers of the examination, but 132 candidates have failed to complete the examination within the requisite period and their previous successes will be cancelled. Thus 733 candidates will be able to progress towards achieving a full pass.

Paper 1, which deals with Firefighting Appliances and Equipment, and Paper 2, Written Communication, both produced a reduced pass rate to that of last year. Paper 3, Practical Firemanship provided a very similar pass rate to that of 1998.

The objective questions in Papers 1 and 3 identified weak areas of knowledge in physics, chemistry and salvage. Although the results of questions on breathing apparatus were average this was considered to be disappointing when considering the importance of this knowledge.

The main concern regarding the responses provided by candidates was to those questions where the information required was contained in Dear Chief Fire Officer Letters/Dear Firemaster Letters, which are identified in the syllabus of the examination. It was readily apparent that, overall, the candidates were not aware of this information which suggested that the candidates had not received it, forgotten it, or not studied it. As this information has supplemented, amended or replaced the information in the Fire Service Manuals, this could be an area that Chief Fire Offices/Firemasters and Brigade Training Officers might wish to investigate.

Basic errors continue to be the downfall of many candidates. Generally, these are a failure to read questions with sufficient care so as to understand what information they required, and then the best way to lay out that information. Long inappropriate answers where a candidate seems to write everything that is apparently known on the subject, rather than deal with the specific part detailed by the question, usually displays a lack of understanding of the question, invariably displays limited knowledge, and most certainly uses a considerable amount of the candidate's valuable time. There were numerous cases where it was felt that short a time spent re-reading the answers and reflecting on their

content would have been beneficial, as this should have enabled easily identified errors to have been corrected.

In Paper 2, each question attempted to provide a realistic scenario that the candidate, as a Sub-Officer, would be expected to deal with. Candidates would do well to realise that the required purpose of the communication will dictate the manner in which it is presented, the words used and the detail provided. In many cases this seemed to have been ignored and the responses were in appropriate to deal with the situation which had been identified.

It would also be helpful if candidates wrote legibly, left spaces between answers and commenced each answer on a new page.

The following pages contain the detailed comments of the Assessors and Examiners and a careful study of them should be beneficial to candidates wishing to sit the examination in future.

PAPER 1: FIREFIGHTING APPLIANCES AND EQUIPMENT

GENERAL COMMENTS

Comments Relating to Objective Questions

These were generally well answered with no specific areas of weakness, although it was disappointing to note that knowledge in the key safety area of breathing apparatus was not as good as should be expected. The standard was slightly lower than last year, but only marginally.

Comments Relating to Subjective Questions

The usual problems arose where candidates failed to read the question and produced long and inappropriate answers, the majority of which attracted few, if any, marks.

This is an area which must be addressed before the answer is started. Candidates must take time to read and understand the question.

It was apparent that many candidates had not read the relevant 'updated' bibliography and this is an issue which needs to be addressed by brigades.

Sadly, there were many candidates who were either badly prepared or clearly not ready to take the examination. Brigade Training Officers should take careful note of this when reflecting on the results they receive.

Attempt FOUR questions only

- 1 There are a number of duties which fall to the officer-in-charge of an incident when considering the commitment of Breathing Apparatus crews.
- (a) With regard to hazard identification, what are the FOUR main areas to be considered (9 marks)
- and
- (b) Where the need for urgent action is not immediate, what should the officer-in-charge take into account when reaching a decision about tactics to be applied? (16 marks)

Bibliography: Technical Bulletin No.1/1997 - Breathing Apparatus CMP2, page 3.

No mention was made in the question of a chemical incident, yet many candidates read the phrase 'hazard identification' in part (a) of the question and produced an answer about a chemical incident. The hazard identification required related to the generic hazards faced at any incident.

In part (b) of the question many candidates listed factors considered in the control of risks by the officer-in-charge and not, as asked, the factors taken in to account in relation to tactics.

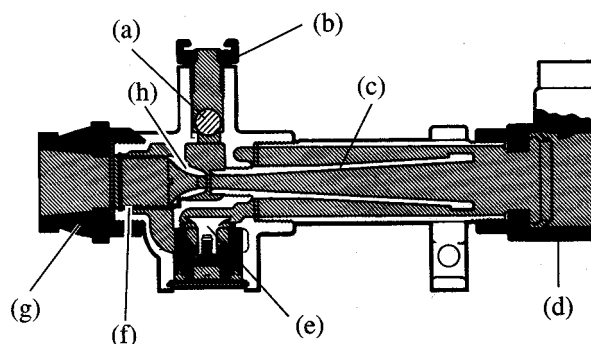
Candidates who answered the question with two or three sides of text usually provided a great deal of inappropriate information and thus wasted valuable time. The best answers took the form of a series of bullet points that required only one sheet of paper.

2 With regard to the use of foam making equipment:

- (a) give the reasons why the use of self-inducing foam making branches is not always suitable. (6 marks)

and

- (b) the diagram below shows an inline inductor:
(i) name the EIGHT indicated parts; and
(ii) explain how the inductor works. (19 marks)



Bibliography: Manual of Firemanship Book 3, Part 3, Chapter 10, pages 77 and 78.

A popular question with candidates. In response to part (a) most attempts identified foam stocks having to be delivered to the branch and restricted

movements of the branch operator. However, to obtain all the available marks in this part, the identification of ideally operating an induction system at a safe distance was required.

Part (b) (i) was generally well answered. The most commonly missed terms were 'improver' and 'nozzle'.

Part (b) (ii) caused candidates the most difficulty. Many candidates confused an inline inductor with a foam generator, describing the entrainment of air and aeration of foam being completed in the inductor. Candidates are reminded that the inductor provides a means of inducing foam concentrate and mixing this with supplied water and then expelled to be aerated at the branch. Candidates also appeared unclear about 'Venturi' principles.

It was noted that lists and principles are being learnt and retained by candidates, but when a question relates to the understanding of these principles, this level of knowledge and understanding was not communicated to examiners.

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- 3 (a) Detail the SEVEN general design features specified for either 9 m or 10.5m ladders. (19 marks)
- and
- (b) Detail the additional features which specifically apply to metal ladders used in the fire service. (6 marks)

Bibliography: Manual of Firemanship Book 5, Part 1, Section 3b, page 4.

This was the second most popular question in the paper and although a number of adequate answers were produced, no candidate managed to obtain all available marks.

Part (a) of the question produced some good answers in straight forward list form but these tended to be let down by the answers to part (b). On this occasion answers were not aided by drawings, but a few candidates produced them.

It was disappointing to note that some candidates still seem to have little grasp of the metric system or failed to check their answers. It is felt sure that such a check would have identified that ladders are generally longer than 300mm!

Responses such as 'must be of the correct weight and size' or 'fit on appliance roof' also failed to attract marks.

The question was quite explicit in its request for design features. Consequently it was surprising to see a number of candidates wander into the areas of standard tests and workshop repairs.

It was pleasing to see that a number of candidates had obviously invested time studying the bibliography and consequently gaining a high level of marks with relatively short answers.

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- 4 A turntable ladder has been properly positioned and conditions for its use are satisfactory.

List the responsibilities of, and safety measures which must now be applied by, the driver/operator to ensure the safety of the firefighter at the head of the ladder.

(25 marks)

Bibliography: FSTM Part 3, Section 8, pages 2 and 3.

This was a very poorly answered question by the majority of candidates who attempted it. This was mainly caused by a failure to read the question properly. Candidates must understand that time spent clarifying the requirement of the question is absolutely essential if they are to give themselves the opportunity to achieve a good result.

It must be noted that the question specifically identified that a turntable ladder had been properly positioned and conditions for its use were satisfactory.

The majority of candidates then went to great lengths in detailing how these already stated facts should be satisfied which wasted valuable time, attracted no marks, and invariably caused the candidate to totally ignore the needs of the question.

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- 5 With reference to portable fire extinguishers:

(a) explain the following terms:

(i) tightness;

(ii) dielectric test; and

(iii) tamping. (6 marks)

and

(b) list the FIVE special provisions required to enable the contents of extinguishers to be discharged and controlled by a user. (13 marks)

and

(c) detail the THREE features in the design of water based extinguishers which must be provided to secure the effective discharge of the cylinder contents. (6 marks)

*Bibliography: DCOL 8/1997, Item N.
DFL 8/1997, Item N*

This was a very unpopular question and was poorly answered by the majority of candidates who attempted it. In part (a), many candidates displayed no knowledge of these terms which implies either a lack of preparation for the examination or the information not being disseminated by brigades.

The answers given in part (b) appeared to rely only on the information contained in the Manual of Firemanship Book 3 rather than DCOL 8/1997.

Almost all the answers provided to part (c) were a duplication of information already submitted for part (b) and so gained no additional marks.

The standard of answers to this question highlights the need for candidates to ensure that they study the up-to-date bibliography.

6 Pumps and the associated hose used with them are subjected to a number of tests.

(a) Detail the quarterly dry vacuum test for vehicle mounted and portable pumps. (10 marks)

and

(b) Detail the annual pressure test for:

(i) layflat delivery hose; and

(ii) semi-rigid hose-reel hose.

(15 marks)

Bibliography: Technical Bulletin 1/1994, pages 13 and 19.

This was the most popular question in this section. It is a practical aspect which firefighters carry out at regular intervals and Sub-Officers will need to supervise. Therefore, it was disappointing that the answers did not reflect a satisfactory level of knowledge.

In part (a), common errors were:

- prime to 8 bars instead of 0.8 bar;
- prime for one minute instead of 45 seconds;
- note the compound gauge for 45 seconds instead of one minute.

Very few candidates mentioned that “blank caps” should be removed from all deliveries. Also many candidates wasted valuable time by comprehensively describing the hard section pressure test after it had failed the vacuum test. Once again, this is a prime example of candidates failing either to read the question properly or having little knowledge of the relevant bibliography.

The answers provided for part (b) were of a more satisfactory level although inaccuracies in the detail of these tests were somewhat surprising.

PAPER 2: WRITTEN COMMUNICATION

GENERAL COMMENTS

The performance of candidates on this paper was very mixed. It ranged from a generally good response to question 1 to a very poor response to question 4.

Sadly, despite clearly stated advice over many years on how candidates performance needs to improve, many basic errors are still made. The most common mistakes are:

- (a) confusion over the correct way to commence and finish a letter. Candidates should remember the convention that a letter commencing with "Dear Sir" should end with "Yours faithfully" and a letter commencing with "Dear (Christian name)" should end with "Yours sincerely"; and
- (b) the incorrect spelling of *sincerely*, *received*, *convenient*, *knowledge*, *business*, *explanation*, *ourselves*, *yourselves*, *writing*, *benefit*, *separate*, *necessary*, *opportunity*, *colleague*, *occasion* and *damage*.

It is obvious from some scripts that the candidate failed to spend a few minutes reflecting on what was required. The importance of thinking about what you are going to write, and how you are going to structure it, before committing pen to paper, cannot be over emphasised.

Finally, candidates should remember the following simple points.

- (a) Read the instructions on the front of the answer book.
- (b) Do **not** write in pencil.
- (c) Start each answer on a new page.
- (d) State the number of words at the end of each answer.
- (e) Enter the relevant question number in the box at the top of the page in the answer book.

SECTION A

Attempt BOTH questions in this Section

- 1 You are SubO Evans in charge of Blue Watch at Dunton Fire Station in Wessex Fire and Rescue Service. You were the officer-in-charge of a fire in a small factory unit which was in a terrace of similar properties. The fire was confined to the unit but crews had to break into one adjoining factory in order to check for any lateral spread of fire. As crews were preparing to leave the incident, the occupier of the premises broken into, Mr Davies, arrived at the scene and complained about the damage caused, threatening to take legal action against the brigade.

You attempted to placate him, explaining why it was necessary to break into his premises, but this failed to satisfy him. A formal letter of complaint is expected.

The details in your notebook are as follows:

Fire - Adams Furniture Works, Leeford Industrial Park, Dunton
Approximately 15 x 10 metres.
Part of a terrace of single storey buildings, approximately 50 x 15 metres.
Date of call – 17 September 1999.
Time of call 0120 hrs – stop message 0155 hrs.
Forced entry into adjacent premises Greendale Ltd – cardboard box manufacturer.
Unable to wait for occupier – damage caused to rear door during forcible entry.
No fire spread – some smoke percolation.
Owner of adjacent premises arrived at 0210 hrs.

You are to write a memorandum to your Station Commander, StnO Brown, reporting the facts, explaining your reasons for entering the adjoining premises and describing the events which took place following the arrival of Mr Davies.

Your memorandum should consist of no more than 250 words in total.

You are to state the number of words at the end of your script.

(25 marks)

Far too often candidates failed to explain the purpose of the memorandum in the first paragraph. To do so helps the reader considerably. A large number of

scripts related irrelevant and mythical firefighting details which were not called for, or missed out the “forced” entry and damaged door altogether.

Many candidates forgot to include a heading or omitted to state the number of words. Those who wrote more than the maximum allowed lost a mark.

2 You are SubO Evans in charge of Blue Watch at Dunton Fire Station, a one pump station in Wessex Fire and Rescue Service.

A new shopping mall has opened on your station ground and your Station Commander has asked you to arrange a programme of inspections under the provision of Section 1(1)(d) of the Fire Services Act 1947 for all four watches on the station.

You are to write a letter to the shopping mall manager, Mr Willis, in order to arrange such a programme, explaining its importance, and the need for it to take place on four occasions. His address is as shown below.

Good Day Mall
Dunton
Wessex.

Your letter should consist of no more than 250 words in total.

You are to state the number of words at the end of your script.

(25 marks)

Many candidates did not make full use of the information given in the question. There was often confusion over the section of the Fire Services Act 1947 relevant to these visits.

Many candidates failed to gain marks through the following:

- By failing to apologise for the inconvenience caused.
- By not mentioning the number of personnel attending each visit.
- Failure to offer specific dates for the visits.
- Poor format and layout.

Available marks failed to be obtained through the production of often lengthy inaccurate scripts which failed to address the issues involved.

SECTION B

Attempt ONE question only from this Section

- 3 You are SubO Evans working in the staff office at the headquarters of Wessex Fire and Rescue Service.

You have been asked to write a short report for the brigade's annual report regarding the work of the brigade over the last year in support of the Fire Services National Benevolent Fund.

The facts are as set out below:

(a)

	1997/98	1998/99
Income	£31,250	£35,100
Expenditure	£20,100	£22,050
Net contribution to the fund	£11,150	£13,050

- (b) 13 of the 24 stations in the service held a flag day in 1998/99, two more than in the previous year.
- (c) There has been an increase in the amount of money raised by the brigade for other charities.
- (d) The income in 1998/99 benefited from a service open day which raised £5000.

Your report should consist of no more than 250 words in total.

You are to state the number of words at the end of your script.

(25 marks)

Many candidates presented the facts given in the question but failed to interpret them to show the year's performance in terms of percentage or monetary increase.

Whilst not a "finance" question, many candidates failed to appreciate the difference between total income and net contributions and confused their answers accordingly.

Candidates who simply reproduced the income/expenditure chart given in the question and just referred the reader to the chart, failed to attract any marks for that section.

Some candidates failed to 'enthuse' the reader to increase future support of the FSNBF which also prevented available marks from being awarded.

Candidates who criticised the donation of monies to other charities gave a negative feel to the report and lost marks.

- 4 You are SubO Evans in charge of Blue Watch at Dunton Fire Station in Wessex Fire and Rescue Service.

You are required to give a talk to a class of students at a local sixth form college about career opportunities in the fire service.

Your task is to write a summary of the main points of your talk for issue to the students at the end of your presentation. It should explain the job of a firefighter and the promotion opportunities available to all. The purpose of the talk is to convince students that the service offers them an exciting, rewarding and worthwhile career.

Your summary should consist of no more than 250 words in total.

You are to state the number of words at the end of your script.

(25 marks)

Many answers took the form of lecture notes with a great reliance being placed on personal experiences which failed to highlight the salient issues.

A high proportion of candidates failed to explain the job of a firefighter and gave little or no information on entry qualifications and standards.

The purpose of the talk and summary was to convince students of the exciting, rewarding and worthwhile career offered by the fire service. Some candidates failed to do that whilst others failed to layout their answers clearly and concisely and failed to obtain available marks accordingly.

PAPER 3: PRACTICAL FIREMANSHIP

GENERAL COMMENTS

Comments Relating to Objective Questions

This year saw a slight overall improvement in the pass rate. Questions on physics, chemistry and salvage work indicated a shortfall in knowledge. Unusually there were many people who believed the output of a water relay depended on the output of the first pump in the relay rather than the pump with the lowest capacity. However, subject to the exceptions identified above, the level of correct responses was generally satisfactory.

Comments Relating to Subjective Questions

Two questions proved particularly unpopular this year which implied that some candidates were left with little choice but to attempt the remaining four or, as in some cases, make dismal attempts at these two.

Evidence of lack of knowledge contained in DCOLs is raising concern that either these were not generally available or candidates had not bothered to study them.

There were some extremely good papers, which is pleasing, but these were the exception. There were also other papers which displayed a very poor and inadequate level of knowledge and understanding of the subject matter which suggested little or no preparation for the examination.

Attempt FOUR questions only.

1 (a) List FIVE properties of metals (15 marks)

and

(b) From the table shown below showing the activity series for metals, for each of the GROUPS of metals A, B, C and D, briefly describe how they react with water. (10 marks)

Group A:	Potassium	K
	Sodium	Na
	Barium	Ba
	Strontium	Sr
	Calcium	Ca

Group B:	Magnesium	Mg
	Aluminium	Al
	Chromium	Cr
	Manganese	Mn
	Zinc	Zn
	Cadmium	Cd
	Iron	Fe
Group C:	Cobalt	Co
	Nickel	Ni
	Tin	Sn
	Lead	Pb
Group D:	Bismuth	Bi
	Copper	Cu
	Mercury	Hg
	Silver	Ag

*Bibliography: Manual of Firemanship, Book 1, Part 2, pages 89 and 90.
Fire Service Manual, Volume 1, Fire Service Technology,
Equipment and Media, Physics and Chemistry for Firefighters,
Chapter 10, page 76.*

This question was not popular with candidates but of those who attempted it almost half obtained a satisfactory level of marks. Part (a) was generally well answered although it was clear, yet again, that many students had not studied the bibliography. Answers such as 'they are shiny' or 'they have a dull lustre', and other such comments attracted no marks and showed this shortfall in preparation.

Part (b) was generally poorly answered with students getting the groups the wrong way round or basing their answer on whether the metals rusted or not. There were some good answers from some who had clearly studied well, though not many.

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- 2 An objective of emergency evacuation procedures is to authorise and enable appropriate Fire Service personnel to initiate the evacuation procedure as soon as they become aware of the need.

When determining the personnel at an incident who will be 'appropriate', what factors will they need to satisfy? (25 marks)

Bibliography: DCOL 5/1994, Item.

DFL10/1994. Item.

An extremely unpopular question with candidates and of those who did attempt it, few gained a satisfactory level of marks.

It was disappointing to find that many candidates failed to answer the question asked and had clearly not studied the appropriate bibliography. The vast majority of answers concentrated on either signs of collapse or other reasons for evacuation or on the use of whistles. It was also very worrying that many candidates, who are possibly already in charge of crews, made basic safety errors in the use whistles for emergency evacuation.

The provision of six points would have attracted high marks, however, once again, poor preparation and a possible reliance on practical experience resulted in the majority scoring very poorly.

3 As an officer-in-charge of a fire you have to decide whether to use horizontal or vertical ventilation and whether the approach should be offensive or defensive.

(a) State the circumstances where :

- (i) **horizontal** ventilation would be most appropriate; and
- (ii) where **vertical** ventilation would be most appropriate.

(18 marks)

and

(b) State what is meant by :

- (i) **offensive** ventilation; and
- (ii) **defensive** ventilation.

(7 marks)

Bibliography: Fire Service Manual Volume 2, Part 2, Chapter 2, pages 25, 28 and 29.

This was a popular question with candidates and high marks were gained by those who had obviously studied the bibliography. Unfortunately, too many candidates chose to describe the methods and procedures of ventilation rather than the factors to consider when deciding the appropriate type of ventilation that should be used, i.e. horizontal or vertical.

In part (b) of the question, too many candidates answered the question inaccurately. The examiners were concerned that many candidates described 'defensive ventilation' as '*if it is unsafe to go inside, it is done by smashing the windows from outside to expel the gases*' or '*it is used to find the seat of fire*'.

4 In relation to incidents in agricultural and industrial silos :

(a) give SEVEN possible hazards; (7 marks)

and

(b) list the factors to be taken into account by the officer-in-charge when reaching a decision about the tactics to be employed when called to an incident where persons have been reported collapsed in a silo. (18 marks)

*Bibliography: DCOL 15/1997, Item G.
DFL 1/98, Item F.*

A very poorly answered question. It was evident that the majority of candidates had relied on their fireground experiences rather than by studying the examination syllabus. Candidates who had read and displayed a knowledge and understanding of the bibliography attained very high marks.

In part (b) of the question, a large number of candidates repeated the hazards list they had provided for part (a) in script form and were not awarded additional marks.

5 When dealing with a fire in any building:

(a) list FIVE factors other than direct burning, heat, smoke, steam, fumes and condensation which can cause loss and damage. (10 marks)

and

(b) in relation to water damage, list SEVEN ways in which firefighters might mitigate damage. (15 marks)

Bibliography: Manual of Firemanship, Book 12, Part 4, pages 169 and 172.

This question attracted the highest number of attempts in Paper 3, but unfortunately the standard of answers provided was very disappointing. Some candidates failed to display an understanding of what the questions required from them especially in part (b), by listing numerous ways to carry out salvage techniques, and providing some very detailed drawings.

6 In relation to fire plans for woodland areas :

(a) What is the purpose of a fire plan? (3 marks)

and

(b) List ELEVEN points you would expect a fire plan to cover. (22 marks)

Bibliography: Manual of Firemanship, Part 6b, Chapter 1, page 15.

This was a popular subject with candidates, probably for some as a last resort, about which they believed they could write something applicable from their general knowledge in preference to leaving a blank page. Unfortunately, in this examination a depth of specific knowledge contained within the bibliography is being tested and not the ability to 'think on one's feet'.

The majority of candidates who attempted the question managed to score a few marks, but it was obvious that the vast majority of candidates were under the impression that a 'fire plan' consisted solely of a plan/map/visual representation of the area, whereas a complete 'plan' requires the preparation of a written document with a plan/drawing/map attached. It was, therefore, often difficult for the candidate to think and write down the points a fire plan should cover with their visual impression solely of a map.

Marks were awarded for reference to specific items, but comments such as "all relevant information" do not demonstrate a candidate's deep knowledge of the subject and like "etc" will not attract marks.

Although it was readily apparent that many candidates had no depth of knowledge of this subject, perhaps the area where the easiest improvements could be suggested was in part (a) of the answer. Most people described what the plan was instead of explaining its purpose, which suggests carelessness in reading the question.

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