



Question Papers and Report of the
Assessors and the Examiners for the
Qualifying Examination for
Promotion to the Rank of
Sub-Officer
Part I: Written Examination 2001

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

GENERAL COMMENTS

The sixteenth examination conducted by the Fire Services Examinations Board produced a pass for 262 candidates with a pass rate of 18.6% from 1409 candidates who sat the examination. When comparing these results with those of last year they show a slight increase in the number of candidates achieving a pass, the same pass rate, and a small increase in the number of candidates sitting the examination.

With only one exception, the number and percentage of candidates achieving a pass in each of the papers reduced, the exception being Paper 1, 'Operations', which provided an increased pass rate to that achieved last year.

Whilst there were a number of excellent scripts provided by candidates in each of the papers, these were definitely in the minority and it was evident that many of those who had sat the examination had been insufficiently prepared.

It is difficult to provide advice on the most effective method of preparing for an examination that will be suitable for all, but it is obvious that this must include time spent on reading the relevant bibliography, understanding what is being read, and being able to communicate this in writing.

Many candidates taking this examination failed to display that this had been a practice that they had followed. Many appeared to rely on experience gained when on duty, yet it is difficult to surmise that the subjects covered by each paper will have already been met in a candidate's present role as the questions being asked relate to higher responsibilities and duties to those which a candidate has.

When undertaking the preparation for the examination, it might be easier if candidates endeavoured to apply what was being read in the bibliography to a situation that could be met and to picture this in their mind. The information obtained will then enable a better understanding of a subject to be realised and recalled rather than attempting to remember detail parrot fashion. It is the measure of this knowledge and understanding that is applied when examination questions are asked but the answers provided must relate to what is provided in the bibliography.

Assuming that effective preparation has been carried out, it only remains for the candidate to apply basic care and examination technique to the questions set in order to achieve the result that their efforts deserve.

An essential factor is to ensure that care is taken to identify what information is being sought by the question. It would appear that many candidates quickly scan the question and provide their answer with a minimum of thought or preparation. In numerous cases this provides a lot of information not relevant to the question and for which no marks can be awarded.

Finally, in order to ensure that their script provides no additional problems, candidates should follow the information provided on the front of the scripts and note, in particular, that ALL the questions on each paper taken are to be attempted. A failure to attempt any question will mean that the opportunity to obtain the required level of marks to achieve a pass in that paper will be more difficult.

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

PAPER 1: OPERATIONS

GENERAL COMMENTS

Comments Relating to Questions

Considering this paper covers operational matters, the responses were regarded as poor although it was pleasing to note that areas covering health and safety, particularly in relation to safe systems of work, were fairly well understood.

Many candidates failed to understand the practical implications of legislation, physics and chemistry as they apply to Fire Service operations, whilst many still appeared to rely on operational experience to respond to questions.

It was noted that many candidate responses were of such a brief nature that they failed to assist in conveying any degree of knowledge and understanding of the subject being asked, which resulted in a poor mark being obtained.

A greater knowledge and understanding of the information in the Study Notes provided by the Board and other bibliography would be beneficial.

It was also apparent that a number of candidates still failed to read the question carefully, which resulted in answers that either gain very poor marks or, in some cases, no marks at all. The importance of taking time at the start of the examination to carefully study the question being asked cannot be over-emphasised.

SECTION A OPERATIONAL PROCEDURES AND INCIDENT COMMAND

Attempt BOTH questions

- 1 You are the officer-in-charge of the initial attendance to a reported fire in a large three storey house in multiple occupation. On arrival you discover that a number of residents are not accounted for, the fire is involving most of the second floor and has already spread to part of the roof which, should it collapse, might cause debris to fall. You carry out your risk assessment.
- (a) What factors will you initially need to consider in order to evaluate the situation, tasks and persons at risk? (15 marks)
- and
- (b) Having evaluated the risk, selected a safe system of work to deal with the situation and having decided to proceed, what are the key factors that you will need to apply to ensure that effective command is established and maintained? (10 marks)

Bibliography: Fire Service Manual Volume 2, Incident Command, Section 3.3, Steps 1 and 3, page 32.

This question attracted a good response from a number of candidates. However, there were only a very limited number of scripts that attracted high marks.

Most candidates offered the Dynamic Risk Assessment Model in their answer to part (a) of the question although this had not been sought and therefore did not attract marks accordingly.

Some candidates gave detailed descriptions of the types of building collapse which unfortunately was not asked and attracted no marks.

Answers which adopted a systematic approach on arrival at the incident including resource implications attracted good marks.

Those candidates who identified the need to sectorise the incident, identifying objectives and responsibilities, both individual and team, and the need for briefings and confirmation of understanding, including the need for safety, attracted high marks for part (b) of the question.

Overall, it was pleasing to note that virtually all candidates adopted safe practices.

- 2 Unidentified chemicals have leaked from drums onto a minor road whilst being carried in a van. Having discovered the leakage, the driver has parked the van on a public open space which has a nearby stream.

On arrival at the incident with two appliances and crews you decide that the most appropriate action is to dilute the leaked chemicals realising that this action will cause some chemicals to enter the stream.

- (a) What reasons will prevent the Fire Service from being guilty of the offence of causing or knowingly permitting polluting substances to enter controlled waters? (15 marks)

and

- (b) (i) Which organisation might advise the Fire Service to modify its activities at this incident in order to minimise environmental damage?

and

- (ii) Having given instructions to dilute the chemicals, what alternative methods of dealing with the spilled chemicals might be suggested to you? (6 marks)

and

- (c) Which organisation will have the responsibility to dispose of the contaminated materials on:

- (i) the road?

and

- (ii) the public open space? (4 marks)

Bibliography: Study Note 2102 - Pollution, pages 2, 4 and 6.

It was clear from the responses that the majority of candidates had not been able to transfer the information from the Study Note to knowledge and understanding in their answers.

Many candidates attempted references to a wide variety of legislation which was incorrect and gained no marks, and often repeated long passages from the question.

A number of responses contained references to the National Rivers Authority which no longer exists. Few candidates were able to identify controlled burning as an alternative method of dealing with spilled chemicals.

In general, candidates failed to answer the specific questions asked, resulting in much irrelevant detail being offered which did not attract marks.

SECTION B FIREFIGHTING AND RESCUE INCIDENTS

Attempt BOTH questions

- 3 You are the officer-in-charge of two pumping appliances and crews responding to a special service call to a local farm. On arrival, the farmer informs you that a cow has fallen into a hole from which it cannot escape without assistance. The site is a considerable distance from any road and the weather is inclement.

For the purpose of providing a safe system of work, what TWELVE points should your assessment of the incident address immediately on arrival?

(25 Marks)

NB THIS QUESTION DOES NOT RELATE TO THE FOOT AND MOUTH EPIDEMIC

Bibliography: Fire Service Guide to Health and Safety, Volume 3 - Guide to Operational Risk Assessment, Section 2.9, page 66.

Generally a well answered question with many candidates obtaining full marks. The question asked for twelve points that the risk assessment should address for the purpose of providing a safe system of work.

Some candidates opted for brevity in their answers, providing statements such as 'access and egress', 'resources', 'manual handling' and 'identify hazards'. Such answers did not provide the required detail and thus attracted few marks.

Candidates who had studied the bibliography were self-evident and provided good answers that attracted high marks.

- 4 A road tanker with three compartments of equal capacity, filled with petroleum spirit, has crashed. The contents have discharged but have not ignited when you arrive as the officer-in-charge of two pumping appliances.
- (a) The area of spillage is 1520 m^2 on a flat surface. Assuming the use of 450 lpm foam making branches and inductors which require 420 lpm water and 13 lpm of 3% foam concentrate and using the Home Office application figures, calculate your expected operational requirements of:
- (i) foam solution;
 - (ii) foam making equipment (branches/inductors);
 - (iii) 3% foam concentrate; and
 - (iv) water. (16 marks)
- and
- (b) The spillage of the contents of a single compartment over 500 m^2 would normally require a third of the needs in (a) (i-iv) above, but if that spillage was in a rural area, what additional factors would reduce these requirements further? (9 marks)

(all formulae and working out to be shown)

Bibliography: Fire Service Manual, Volume 2 - Firefighting Foam, Chapter 6, pages 36, 37 and 38.

Overall this question was very poorly answered.

Part (a): Those few candidates who attempted this part of the question and whose answers attracted high marks were those who had a knowledge of the Home Office application figures. This critical element was not readily known to many candidates as 4 lpm/m² for 15 minutes duration.

The majority of candidates failed to use the information given in the question in most calculations. This resulted in long, confused and unrealistic answers.

Candidates failed to obtain available marks by not showing all workings and formulae as requested in the text of the question.

Part (b): The majority of candidates answered this part of the question only. However, relatively few were able to produce valid comments and it was obvious that answers were generally based on somewhat limited experience rather than information contained in the bibliography.

The common points which failed to attract marks included spillage with fire, environmental issues and risks to life and property.

In general, candidates failed to answer the questions asked, resulting in answers which suggested a very limited knowledge of what resources might be required to deal with the types of incident provided by the scenarios described.

SECTION C SCIENCE AND FIREFIGHTING

Attempt BOTH questions

- 5 Having taken your watch members to a new factory under Section 1(1)(d) of the Fire Services Act 1947, you calculate that the provided mains water supplies would be inadequate in case of fire.

Investigations discover that the present mains supply cannot be improved, but a trunk main runs beneath the access road about 10m from the factory, and a large private lake is close by, but 100m from any roadway which makes access difficult.

- (a) What is the legislative duty placed on a fire authority as regards the provision of an adequate supply of water in case of fire? (7 marks)

and

- (b) As part of your operational planning, how would sections 14 and 15 of the Fire Services Act allow you to improve water supplies in relation to:
- (i) the trunk main; and
- (ii) the private lake? (10 marks)

and

- (c) As part of your operational response, what would be the legislative situation should you need to use additional water supplies at a fire at this factory without any improvement to the water supply having been made? (8 marks)

Bibliography: Study Note 2104 – Hydrants and Water Supplies, pages 3 and 4.

Unfortunately, a significant number of candidates appeared to rely on day to day experiences. These candidates failed to identify the relevant details within the appropriate sections of the Fire Services Act and did not achieve high marks.

In part (b), very few candidates identified that no legislation permits the fixing of fire hydrants on trunk mains and this part of the question was poorly answered.

The highest marks were achieved by those candidates who had clearly read the question carefully and displayed an understanding of the detail of each section of the Fire Services Act as it applies to the provision of water supplies for firefighting purposes. The evidence within the answers received suggested that further study of this important legislation should be generally exercised.

- 6 You attend an incident in an industrial premises which uses paraffin in baths. The heating of one of these baths is out of control and a region now exists above the liquid surface in which the evaporating fuel vapour is well mixed with air.

Define and explain the process as it continues through:

(a) flashpoint; (9 marks)

and

(b) firepoint; (8 marks)

and

(c) flash fire. (8 marks)

Bibliography: Fire Service Manual, Volume 1 - Physics and Chemistry, Chapter 7, page 53.

Approximately 30% of candidates who attempted this question gained satisfactory marks.

Candidates who repeated a definition within their explanation for each part of the question only displayed a lack of understanding for which marks could not be awarded.

Most candidates had a limited understanding of the terms Flashpoint and Firepoint, however it was disappointing to note that the majority confused Flashfire with Spontaneous Combustion.

The clear lack of understanding of these fundamental processes calls into question the ability of many who wish to be incident commanders to carry out a basic risk assessment at incidents of this nature.

PAPER 2: FIRE SAFETY, EDUCATION AND ENFORCEMENT

GENERAL COMMENTS

Comments Relating to Questions

It was a common thread running through the comments of examiners on the responses provided to the questions in this paper that candidates failed to take sufficient care when reading the question and so failed to obtain the available marks. This was because they merely spewed out in a disorderly fashion all they knew on a subject rather than targeting their answer to maximum effect.

Likewise, as has been said in many previous examination reports, it was obvious that some candidates had either not studied the bibliography or failed to do so effectively and entered the examination relying on their general knowledge and experience of the subject matter. This approach is rarely, if ever, going to result in success in this or any other examination.

SECTION A FIRE DEFENCE AND ALERTING SYSTEMS

Attempt ALL questions

- 1 Automatic fire venting is not generally applicable to multi-storey buildings. However, the use of health venting and air conditioning systems in multi-storey buildings is increasing and such systems can present a hazard rather than help in an outbreak of fire.

Fire prevention measures have therefore been devised to control the potential fire hazard of these systems.

- (a) What FOUR functions are these fire prevention measures designed to fulfil. (12 marks)

and

- (b) By the use of a single word, identify each of the THREE main groups that mechanical ventilation systems may be divided into. (9 marks)

and

- (c) Provide a simple description of ONE of the systems identified in (b). (4 marks)

Bibliography: Manual of Firemanship Book 9, page 178.

Those candidates who scored highly on this question gave short concise answers drawn from information provided in the bibliography.

Many candidates assumed that marks would be gained by discussing any ventilation system and these candidates gained few marks for their efforts.

- 2 Community Alarm Centres (CAC's) filter out many calls which might otherwise have led to an unjustified 999 call to the Emergency Services.

'CAC operators are in a unique position to help emergency service control staff if a call is routed via a CAC'.

Describe briefly SIX reasons to support this statement.

(25 marks)

Bibliography: Fire Service Manual - Communications and Mobilising, page 61.

The question required a description of how Community Alarm Centre operators can help the emergency services control staff. A number of candidates failed to recognise this and either had no idea of how a Community Alarm Centre operates or gave a lengthy description of different types of false alarm.

Those candidates who had clearly read and understood the information within the bibliography provided answers that achieved satisfactory levels of marks.

- 3 Your watch is about to undertake a Section 1(1)(d) visit to a multi-storey factory building with basements where a dry rising main is provided. Prior to the visit you decide to use the opportunity to explain the design of a dry rising main to the watch.

Identify and describe the purpose of:

- (a) the design features of a dry rising main (Dry Riser); (21 marks)

and

- (b) the advantages it provides to firefighters. (4 marks)

Bibliography: Study Note 2202 – Fire Extinguishing Systems, pages 8 and 9.

This was generally a well answered question, but it was obvious that a number of candidates were relying on their operational experience. Those that scored well achieved their marks by recalling the extra detail required by the question that they had read in the bibliography.

SECTION B FIRE INVESTIGATION

Attempt ALL questions

4 You are the Sub-Officer investigating a possible arson fire.

Describe:

(a) how photographs of the incident and your notes might be useful to the investigation; (17 marks)

and

(b) the care that must be applied if these photographs and notes might be required in Court proceedings. (8 marks)

Bibliography: Manual of Firemanship Book 12, page 228.

There appeared to be a general lack of understanding of the process of fire investigation and the use of photographs for this purpose amongst candidates, and many failed to obtain the available marks for this reason. Examiners are not only looking to see if candidates can remember lists of facts, but are more importantly looking for the candidate to demonstrate a knowledge of the subject applied to the particular question.

5 As the Sub-Officer seeking to establish the cause of a fire in a factory you must speak to as many people as possible who might be able to provide useful information.

List the sort of questions you would want answered in order to find out:

(a) the initial signs of the fire, from a witness at the site; (10 marks)

and

(b) the situation immediately before the fire, from employees. (15 marks)

Bibliography: Manual of Firemanship Book 12, pages 211 and 212.

Another question where reliance on a candidate's seemingly limited operational knowledge and experience proved a recipe for a poor score. The bibliography provides a list of questions relevant to each part of the question, but from the scripts marked it would appear doubtful that many candidates had studied these or, if they had, obtained insufficient knowledge and understanding to assist them with their answer.

- 6 Whether a fire develops quickly or slowly in its early stages is often an indication of what materials were first ignited and whether they were enclosed or compact.

Describe the various indications of the rate of growth on:

(a) glass (windows and mirrors); (8 marks)

and

(b) plaster; (8 marks)

and

(c) degree of burning; (4 marks)

and

(d) wallpaper. (5 marks)

Bibliography: Manual of Firemanship Book 12, pages 216 and 217.

Some of the best answers to this question were provided by candidates who decided to provide the relevant information in table format, which was easy to understand and therefore mark.

Marks failed to be obtained by those candidates who did not relate damage to the rate of fire growth. Greater care needs to be exercised in the use of all descriptive words, for instance, an intense fire does not necessarily develop rapidly.

PAPER 3: HUMAN RESOURCE MANAGEMENT

GENERAL COMMENTS

Comments Relating to Questions

The somewhat limited nature of the bibliography for this paper meant that candidates should have been able to have a reasonable “guess” at likely topic areas for questions. The provision of pre-prepared Study Notes also assisted a significant number of candidates in focussing their study programme. However, this approach was not apparently taken by a large number of candidates who relied on personal experience and knowledge of their own Brigade procedures, as applied in a Human Resource Management context.

The paper examined awareness of employment law, training and development, and health, safety and welfare matters. An underpinning knowledge of all of these “core” areas is important for any supervisor. A particular area of concern was the confusion by a very large proportion of candidates, in their responses to questions 3 and 4 which considered different aspects of training; one looking at the planning of training, in terms of a systematic approach, and the other seeking awareness of a risk assessment of a scenario based training event.

Question 1 was seeking an explanation of grievance procedures within a Fire Service environment. Given the limited bibliography and the absence of a question in this area in previous years’ examinations, there was a reasonably high level of probability that a question would be set.

Question 2 was a question considering a specific element of absence-monitoring procedures, the notification of absence and procedures to be followed when someone is sick during annual leave. The continuing emphasis on managing sickness absence in the Fire Service meant that a review of the previous years’ questions on this area would have gained good marks.

Question 3 was looking for the application of a systematic approach to training.

Question 4 was a particularly relevant question asking for an explanation of a risk assessment process applied to a scenario based training event.

Question 5 demanded a list of “health” areas covered by the Workplace (Health, Safety and Welfare) Regulations 1992, with supporting explanation of the standards applied to areas such as ventilation, temperature, cleanliness, etc. Unfortunately this question attracted a very high level of zero marks due to many candidates providing information about welfare arrangements, rather than the information about health arrangements that was being sought by the question.

Question 6 examined a broader awareness of absence procedures.

There was some evidence of a more serious approach to the examinations by a larger number of candidates than has sometimes been the case in the past, and this is a hopeful sign for the future. Notwithstanding this optimism, however, there is still a long way to go in terms of raising awareness in candidates of the need to invest time and effort in preparation for the examination and gaining knowledge that will prove beneficial to them during their careers.

It was noted that the spelling of basic words used within the Fire Service was a problem to a significant number of candidates, but as no marks are allocated for spelling no penalty was applied.

SECTION A EMPLOYMENT

Attempt BOTH questions

- 1 A firefighter informs you that they are considering submitting a grievance and requests advice on the procedure.

Explain in detail:

- (a) the initial stage of the procedure to be applied to the grievance; (5 marks)

and

- (b) the second stage of the procedure should the firefighter continue to be aggrieved; (18 marks)

and

- (c) the final level of recourse within the procedure, should the firefighter remain aggrieved. (2 marks)

Bibliography: Study Note 2302 - Grievances and Disputes, pages 2 and 3.

Although the question was relatively straightforward, there was a lot of detail given within answers that was unnecessary.

Candidates who were familiar with the Study Notes scored well. This was despite a lack of clarity over where the initial stage of the grievance procedure finished and the second stage began.

Candidates were still able to gain valuable marks because they portrayed an effective grievance procedure. However, very few gained the marks for part (c).

Disappointingly, a number of candidates went into written grievance at the start of the process, and other answers strayed towards explanations of discipline procedures rather than grievance procedures.

2 You are explaining the Brigade sickness procedures as part of a training session, to your watch. Highlight the areas you would cover in relation to:

(a) the action that an employee is obliged to take when unable to attend for work due to sickness.

(16 marks)

and

(b) the employee's entitlement to reimbursement of leave if absence, due to sickness, is during:

(i) a period of programmed annual leave; and

(ii) a public holiday.

(9 marks)

Bibliography: Study Note 2301 – Absence through Sickness, pages 2 and 3.

Although the majority of candidates achieved good marks on this question, many marks were lost due to candidates answering the question based on their own Brigade procedures, rather than the generic procedures within the associated bibliography.

Often this led to candidates referring to a specific internal form, even in some cases simply quoting a form number, without explaining the purpose of the form. If they had expanded on their answers they could have earned higher marks.

Too many candidates spent valuable time referring to their local occupational health scheme, or "return to work" interview procedures, neither of which were relevant to the question.

Relevant points, which attracted marks, included reference to the requirement for a medical certificate and to whom medical certificates should be submitted, ie to persons identified by the fire authority.

There was a general lack of understanding of the loss of entitlement to public holiday leave should a person be on sick leave on the day of a public holiday, and that programmed annual leave will only be "reimbursed" if the absence due to sickness is covered by a medical certificate.

SECTION B TRAINING AND DEVELOPMENT

Attempt BOTH questions

- 3 You have identified a training need for a number of firefighters on your watch.
- (a) List the points of best practice you should adopt to deliver the training. (18 marks)
- and
- (b) Draw and illustrate a diagram of the systematic training cycle. (7 marks)

Bibliography: Study Note 2305 – Planning and Analysis of Training, pages 2 and 5.

Candidates who had apparently taken the time to make use of the Study Note were able to attain high marks relatively easily.

However, many candidates were clearly ill-prepared and chose to simply relate their local Brigade training policies and procedures. Many of the candidates, it might be assumed, are/would be responsible for training in their current role. The lack of understanding displayed in their answers, with regard to the provision of training, gave the examiners cause for concern.

-
- 4 A scenario based training event in relation to an operational incident has been organised. You have been asked, as a suitably qualified competent person, to carry out a training risk assessment.
- List the items you will have to take account of when carrying out the risk assessment. (25 marks)

Bibliography: Study Note 2306 – Scenario Based Training, pages 5 and 6.

The importance of taking time to read the question correctly cannot be over emphasised. Many candidates failed to obtain marks by not identifying that the training event **had already** been organised.

Those candidates who believed that quantity rather than quality was the key to achieving high marks should take note of an individual who achieved full marks in 12 lines of carefully written text. A great deal of irrelevant information was included in the majority of answers, indicating that candidates were relying on general knowledge rather than knowledge gained from studying the bibliography.

There was a need for candidates to put their answers into context, eg “the hazards and risks inherent to the training site”, as opposed to “the hazard from the risk”. Many candidates appeared to assume that the examiners knew exactly what they meant despite the phraseology used.

In summary, this was a poorly answered question due to an apparent lack of study and a failure to read the question carefully.

SECTION C HEALTH, SAFETY AND WELFARE

Attempt BOTH questions

- 5 The Workplace (Health, Safety and Welfare) Regulations 1992 establish minimum requirements for health, safety and welfare at workplaces.
- (a) List the SIX provisions covered by these Regulations under 'Health'. (6 marks)
- and
- (b) Explain the minimum standards for each of these areas identified in your answer to (a) above. (19 marks)

Bibliography: Study Note 2309 – The Workplace (Health, Safety and Welfare) Regulations 1992, page 3.

In general the majority of candidates poorly answered the question. This was as a result of the question not being fully read and understood.

Many answers concentrated on "safety and welfare" issues rather than "health" as stated in the question. Subsequently these answers did not attract any marks at all. Candidates must read the question with sufficient care to identify the information it seeks.

Those candidates who concentrated on the six health provisions, in the main, attracted a satisfactory level of marks. A list that included ventilation, suitable and sufficient lighting, cleanliness and work space, accompanied by further information about each provision, would have received high marks.

- 6 As the officer-in-charge of a watch, you are responsible for managing sickness absence.
- (a) Describe how this responsibility would be met when absences are reported. (12 marks)
- and
- (b) List the reasons for absence due to sickness under FOUR main headings. (8 marks)
- and
- (c) List the organisational and personal factors that can cause sickness absence. (5 marks)

Bibliography: Study Note 2311 – Work Related Sickness, pages 2 and 3.

Part (a) was by far the least well answered part of the question. It was evident that the minority of candidates who answered this well had read and absorbed the information in the Study Note. Unfortunately, these were a minority. Many answers concerned themselves only with staffing level problems due to sickness and ignored the individual who was sick. A number of candidates felt that recording sickness on their Brigade form was the extent of meeting responsibility.

Some involved Control operators or Occupational Health personnel rather than an explanation of how they would manage it. Candidates who listed their answers did far better than writing it in essay form.

Parts (b) and (c) were often confused by candidates. Many listed different types of illnesses rather than the reasons for absence. A high number of candidates did not differentiate between the questions in parts (b) and (c), and in fact many answered (b) and (c) identically.

Overall, even though absence management continues to be an important issue within the Fire Service, the question was not well answered.

GENERAL COMMENTS

Comments Relating to Questions

The paper assessed the ability of candidates to add, subtract, multiply, divide, calculate area and volume, to work with decimalisation, application of formulae, percentages, averages, pie charts and bar charts.

Only about 60% of the candidates obtained a satisfactory level of marks by demonstrating a reasonable level of ability in these areas, and the main problems found are described by the examiners dealing with each question in the information that follows.

Basic errors that could have been avoided with the application of greater care were the apparent lack of care when reading a question and the facts that were provided, not laying out work in a methodical way by commencing with the formula that will be applied, the application of numbers and stages of calculation that follow, and the clear specification of the result of the calculation in the appropriate units. There is a need to indicate to the examiner the logic of how you achieve your answers if you are to obtain all the marks that are allocated.

Similarly, when producing bar charts, or similar, the candidates need to ensure that they are carefully drawn and properly and suitably labelled. The use of a straight edge when producing a bar chart for the answer to question 2(b)(iii) has a far greater chance of providing the appropriate accuracy than a freehand drawing.

Attempt BOTH questions

1 This question refers to calculations necessary to determine the storage provisions for materials.

- (a) An appropriate code of practice recommends a banded containment capacity equal to 110% of the stored product, plus an extra 75% in environmentally sensitive situations.

The containment volume is calculated according to the maximum stock to be stored at any one time generally expressed as pallets, where an average pallet = 615 litres.

If a store measures 15 m x 8 m, and if the maximum stock is 100 pallets, what will be the recommended height of the bund wall, in metres:

- (i) for a normal stored product;

and

- (ii) in an environmentally sensitive situation?

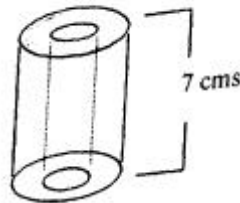
Give your answers to 2 decimal places.

(16 marks)

(All formulae and working out to be shown).

and

(b)



The figure above represents a metal object with a hollow centre. The object has a radius of 4 cm and the hollow core has a radius of 1 cm.

If the metal weighs 40 grams/cm³, what is the weight of the object expressed in kilograms?

$$\pi = 3.142$$

Give your answers to 2 decimal places.

(9 marks)

(All formulae and working out to be shown).

Bibliography: Study Note 2401, Application of Number.

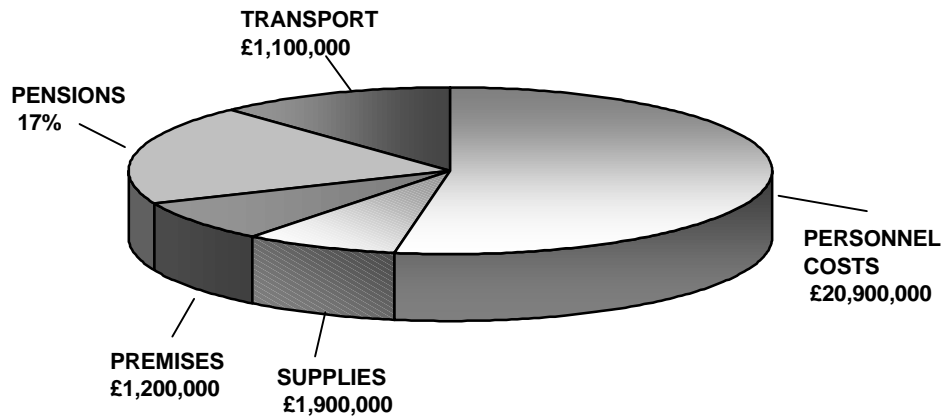
Candidates who had prepared for this examination performed well on this question and achieved a just reward with high marks.

Many candidates failed to obtain available marks by not showing the formula and working out, as requested by the question. Candidates should remember that when a rounding up of an answer, in this case to two decimal places, is required, this process should only take place with the final answer and not during the various stages of the calculation.

It is also important to take great care when placing decimal points in the appropriate place as a number of candidates provided unrealistic answers for the heights of bund walls to contain the stock defined for part (a)(i) and (ii). There is a massive difference between the correct heights of 0.56m and 0.95m respectively, when compared with 56m and 95m respectively, as provided by a number of candidates. Such heights should have been readily recognised as totally unrealistic by applying simple logic.

2 An audit is to be carried out within the brigade and certain queries have been raised.

(a)



The above pie chart shows the breakdown of a brigade budget.

(i) How much, in pounds, is spent on pensions? (to the nearest pound).

and

(ii) What percentage of the budget does the portion of the pie chart marked 'personnel costs' amount to? (to the nearest whole figure).

(7 marks)

and

- (b) The following is part of a vehicle log book that has been returned because it contains errors.

Date	Journey	Speedo Start	Speedo End	Mileage
1 Feb	A	69452	69461	9
1 Feb	B	69461	69500	49
1 Feb	C	69500	69509	9
2 Feb	D	69509	69527	18
3 Feb	E	69527	69536	9
3 Feb	F	69536	69562	26
4 Feb	G	69562	69572	10
4 Feb	H	69572	69581	9
5 Feb	I	69581	69599	18
6 Feb	J	69599	69610	11
6 Feb	K	69610	69678	68
6 Feb	L	69678	69687	9
7 Feb	M	69687	69706	19
8 Feb	N	69706	69726	20
9 Feb	O	69726	69744	16
10 Feb	P	69744	69754	10
10 Feb	Q	69754	69789	35
			TOTALS	345

The recorded speedo readings are correct.

- (i) Identify the errors;
- (ii) Calculate the correct average journey length during this period (to one decimal place); and
- (iii) Draw and label a bar chart to show the average DAILY mileage driven.

(18 marks)

Bibliography: Study Note 2401, Application of Number.

In part (a)(i), many candidates either failed to recognise that the known costs that could be totalled amounted to 83% or, having done so, calculated 17% of that total. The correct method was to realise that the amounts given totalled 83% and from that calculate 1% that could then be multiplied by 17 to provide the answer. For (ii), the division of the sum allocated for 'Personnel Costs' by the answer obtained for (i) provided the answer.

The various logical methods of achieving the required answers as provided by the candidates were also accepted and marked accordingly.

In part (b)(i), many candidates failed to identify the three errors in the logbook. Although the information in the question informed candidates that the recorded speedo readings were correct, some still corrected these to satisfy the three incorrect totals which then made the next commencing speedo reading incorrect. Some other candidates suggested errors where they did not exist.

In part (b)(iii), the question clearly asks for a bar chart. Some candidates produced a pie chart. Poor labelling and inappropriate axis on many of the bar charts meant that available marks could not always be awarded.

Those candidates who used a straight edge rule to assist in drawing their bar chart scored higher on accuracy than wobbly hand produced charts. When producing a bar chart, candidates must be aware that the use of the correct data is fundamentally important.



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