

March 2017

# Examiners' Report

## NEBOSH International Certificate in Fire Safety and Risk Management (IFC1)



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## NEBOSH INTERNATIONAL CERTIFICATE IN FIRE SAFETY AND RISK MANAGEMENT

### UNIT IFC1: INTERNATIONAL FIRE SAFETY AND RISK MANAGEMENT

**MARCH 2017**

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# Introduction

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NEBOSH (The National Examination Board in Occupational Safety and Health) was formed in 1979 as an independent examining board and awarding body with charitable status. We offer a comprehensive range of globally-recognised, vocationally-related qualifications designed to meet the health, safety, environmental and risk management needs of all places of work in both the private and public sectors.

Courses leading to NEBOSH qualifications attract around 50,000 candidates annually and are offered by over 600 course providers, with examinations taken in over 120 countries around the world. Our qualifications are recognised by the relevant professional membership bodies including the Institution of Occupational Safety and Health (IOSH) and the International Institute of Risk and Safety Management (IIRSM).

NEBOSH is an awarding body that applies best practice setting, assessment and marking and applies to Scottish Qualifications Authority (SQA) Accreditation regulatory requirements.

This report provides guidance for candidates and course providers for use in preparation for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content and the application of assessment criteria.

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## General comments

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Many candidates are well prepared for this unit assessment and provide comprehensive and relevant answers in response to the demands of the question paper. This includes the ability to demonstrate understanding of knowledge by applying it to workplace situations.

There are other candidates, however, who appear to be unprepared for the unit assessment and who show both a lack of knowledge of the syllabus content and a lack of understanding of how key concepts should be applied to workplace situations.

This report has been prepared to provide feedback on standard date IFC1 examination sat in March 2017.

Feedback is presented in these key areas: responses to questions, examination technique and command words and is designed to assist candidates and course providers prepare for future assessments in this unit.

Candidates and course providers will also benefit from use of the 'Guide to the NEBOSH International Certificate in Fire Safety and Risk Management' which is available via the NEBOSH website. In particular, the guide sets out in detail the syllabus content for IFC1 and tutor reference documents for each Element.

Additional guidance on command words is provided in 'Guidance on command words used in learning outcomes and question papers' which is also available via the NEBOSH website.

Candidates and course providers should also make reference to the FC1 'Example question paper and Examiners' feedback on expected answers' which provides example questions and details Examiners' expectations and typical areas of underperformance.

## Unit IFC1

### International fire safety and risk management

- Question 1**
- (a) *In relation to explosions, give the meaning of:*
- (i) *deflagration;* (2)
- (ii) *detonation.* (2)
- (b) **Outline** *the mechanism of a boiling liquid expanding vapour explosion (BLEVE).* (8)
- (c) **Outline** *suitable precautions to prevent and minimise the effects of an explosion.* (8)

This question assessed candidates' knowledge and understanding of learning outcome 2.5: Outline the principles of explosion and explosive combustion.

This question is drawn from a technical part of the syllabus assessing knowledge of types of explosions and the mechanism of one particular type, the boiling liquid expanding vapour explosion (BLEVE). There was a limited response to parts (a) and (b) with some candidates not providing an answer at all. Of those candidates who gave an answer many did not know the distinction between a deflagration and a detonation, with some making vague reference to the term '*supersonic*' without relating it to the shock wave involved in a detonation. Similarly, there were few candidates who had a clear understanding of the BLEVE mechanism with many giving vague responses that a fire attacking a vessel containing flammable material would cause failure of the vessel, which did not attract many marks. There were a few candidates who gave more detail of the mechanism, such a pressure build up in a vessel causing pressure increase and venting of flammable vapour through the pressure release valve lowering liquid levels in the vessel, etc. However, no-one provided a full answer with the steps involved given in the correct sequence.

Answers to part (c) were better with some candidates outlining a good range of practical measures to prevent and minimise the effects of explosions indicating this part of the syllabus was more widely understood.

It is important that candidates study and make sure they understand more technical parts of the syllabus as well as practical parts of it that they may have a greater practical experience of. Candidates are encouraged to seek guidance from their course providers where they feel they do not understand parts of the syllabus. Course providers are reminded to ensure technical aspects are covered in detail and to make sure candidates are aware that they can seek additional guidance if needed.

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- Question 2** **Outline** *appropriate design features of a separate outdoor building that is to be used to store flammable liquids in large drums.* (8)

This question assessed candidates' knowledge and understanding of learning outcome 3.2: Outline appropriate control measures to minimise fire and explosion risks.

There were some good responses to this question but many candidates only gave a list of features with insufficient depth to be awarded good marks for an 'outline'. For example stating that the building should have 'proper ventilation' did not gain marks, it would be necessary to provide more detail such as providing high and low level ventilation using air bricks or when necessary forced ventilation.

It is important that candidates have a good understanding of the amount of depth needed to satisfy the different command words used in questions. It is recommended that candidates study the command word guidance provided on the NEBOSH website (link at end of this report) and seek advice from their course providers on this important area of examination technique.

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**Question 3**     ***Outline** the principles of prevention that must be applied when considering fire safety measures to help ensure the safety of people and premises from the effects of fire.* **(8)**

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This question assessed candidates' knowledge and understanding of learning outcome 6.2: Outline the principles and practice of fire safety risk assessments including principles of prevention (measures to remove and reduce risk).

The syllabus specifically sets out the principles of prevention that are applied when deciding upon fire safety measures and are important principles that should be known by anyone involved in fire safety. Responses to this question were mixed, some candidates knew the principles and gained high marks. However, many candidates misinterpreted the question and gave answers outlining the steps of fire risk assessment, while others gave lists of various practical fire safety measures that was not asked for. It is strongly advised that candidates read and re-read questions carefully to reduce the chance of misinterpreting questions.

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**Question 4**     (a)     ***Identify** the components of the fire triangle.* **(3)**  
(b)     ***Explain** the conditions required for a combustion process to be maintained.* **(5)**

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This question assessed candidates' knowledge and understanding of learning outcome 2.1: Explain the principles of the combustion process in relation to fire safety.

The first part of this question was answered very well with nearly all candidates gaining full marks.

The second part was assessing candidates' understanding of the detail of conditions needed for combustion to take place and this was less well answered by many. Most candidates gave insufficient detail in their answers to satisfy an 'explain' question with many giving no more than would be expected for an 'identify'. There were also some candidates who misinterpreted the question and explained the ignition, growth, steady state and decay stages of fire which was not asked for.

Candidates were expected to be able to explain that combustible fuel of an appropriate chemical composition must be present; that heat from external sources or from the fire itself will heat and ignite unburned fuels and oxygen must be present to react chemically with fuel, etc.

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**Question 5**     **Outline** *economic costs to an employer of inadequate fire safety management.* **(8)**

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This question assessed candidates' knowledge and understanding of learning outcome 1.1: Outline the moral, social and economic benefits of good management of fire safety.

This question assessed candidates' understanding of the range of potential economic costs that can affect employers if fire safety is not managed well. There are a multitude of potential costs such as the total loss of the business in the worst case as well as loss of production, fines from prosecutions, costs from civil claims, etc. Many responses were limited in scope and also points were frequently listed with no detail provided to satisfy an 'outline'.

Candidates again are urged to ensure they understand the amount of detail required to satisfy an 'outline' question as well as the other command words used in questions.

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**Question 6**     *The main premises of a distribution organisation consist of a large warehouse facility, offices and a workers' kitchen.*

**Outline** *how typical ignition sources that may be found in these premises can cause a fire.* **(8)**

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This question assessed candidates' knowledge and understanding of learning outcome 3.1: Explain the causes of fires and explosions in typical work activities.

There was a limited response to this question. There are a variety of reasons how ignition sources can cause a fire in workplaces and those involved in fire safety would be expected to understand these. Most candidates were able to identify a number of ignition sources but did not go on to outline how they could start a fire in the premises given in the stem of the question. As an example stating that an electrical fault was a possible ignition source did not gain marks, it was necessary to go on to outline that an electrical fault (eg a short circuit) can cause excess heat and sparks that can ignite fuels touching or close to the faulty equipment.

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**Question 7**     (a)     **Identify** *pathways by which pollutants from the site of a fire can enter the water ecosystem.* **(3)**

                  (b)     **Identify** *methods that can be used to contain fire-fighting water run-off produced at the site of a fire.* **(5)**

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This question assessed candidates' knowledge and understanding of learning outcome 4.6: Outline steps to minimise the environmental impact of fire and fire-fighting operations.

This question was answered well by most candidates. Means by which pollutants could enter the water ecosystem such as via surface water drainage and run-off into the ground, rivers and streams, etc, were well-known. However, there were some answers where the distinction between surface water drains and foul drainage systems was not understood. Most answers included a good range of means to contain fire-fighting water and were awarded good marks.

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**Question 8**     *Following a fire at a workplace, **identify FOUR** external agencies with which an employer may need to liaise **AND give** reasons in **EACH** case.*     **(8)**

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This question assessed candidates' knowledge and understanding of learning outcome 1.5: Explain the purpose of, and the procedures for, investigating fires in the workplace.

This question was answered well with many candidates gaining more than half marks. At least four external agencies were identified in most answers including the enforcing bodies, police, insurance companies, etc, and the reasons which the employer should liaise with each were also given.

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**Question 9**     (a)     ***Identify** categories of persons who may need particular assistance in order to reach a place of safety in the event of a fire in a workplace.*     **(3)**

                  (b)     ***Outline** ways that could be adopted to assist vulnerable persons to reach a place of safety in the event of a fire.*     **(5)**

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This question assessed candidates' knowledge and understanding of learning outcomes 5.1: Explain the purpose and requirements of a fire emergency plan; and 5.2: Describe the development and maintenance of a fire evacuation procedure.

There was a mixed response to this question. In some cases answers to part (a) were limited to stating vulnerable persons without identifying different types such as people with physical disabilities or mobility problems, those with sensory deficiencies, people with learning difficulties, etc. However, most candidates gave good answers to this part.

Part (b) expected some detail of the means of assisting vulnerable persons but there were many answers where simple lists of measures such as evacuation chairs and tactile signs were given without the additional information to show the way each measure would assist such people, which was asked for by the question and hence low marks were awarded.

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**Question 10**     ***Explain** why a fire risk assessment should be carried out in a workplace.*     **(8)**

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This question assessed candidates' knowledge and understanding of learning outcome 6.1: Explain the aims and objectives of fire safety risk assessments.

There are many reasons why fire risk assessments should be carried out ranging from moral reasons such as to reduce the risk of harm to employees and other persons who could be affected by a fire, the requirement to comply with any legal requirements in force, and minimising any financial consequences to an organisation, through to fire safety-related reasons such as identifying fire hazards and to develop suitable measures to minimise fire risk.

Responses to this question were limited with many candidates misinterpreting the question by explaining how a fire risk assessment can be carried out using a five step approach rather than why it should be carried out. It is essential that candidates read and re-read all questions carefully to reduce the chance of misinterpreting what is being asked for.

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**Question 11** *Outline why a fire-resisting door may fail to provide adequate protection in the event of a fire.*

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**(8)**

This question assessed candidates' knowledge and understanding of learning outcome 4.1: Outline the means of fire protection and prevention of fire and smoke spread within buildings in relation to building construction and design.

The reasons why a fire door may fail to provide adequate protection include if it were wedged open, there was damage to features of the door (eg smoke seals) and other physical damage (eg warping of the door). In many cases candidates did not outline these reasons and instead gave lists of the various features of a fire door with no detail why each feature provides protection. It is most important that candidates read, re-read and understand what is being asked for in a question and do not produce rote-learned answers to different questions asked in similar areas of the syllabus (see section on rote-learned responses, below).

## Examination technique

The following issues are consistently identified as the main areas in need of improvement for candidates taking Certificate level qualifications:

### Candidates misread/misinterpreted the question

Candidates misreading or misinterpreting the question is by far the most common cause of candidates not gaining the maximum marks available.

NEBOSH questions are systematically and carefully prepared and are subject to a number of checks and balances prior to being authorised for use in question papers. These checks include ensuring that questions set for the Certificate level qualifications relate directly to the learning outcomes contained within the associated syllabus guides. The learning outcomes require candidates to be sufficiently prepared to provide the relevant depth of answer across a broad range of subject areas. For example, a candidate could be asked about the causes of stress, or could be asked about the effects of stress. A question could require a response relating to the principles of fire initiation, or a question could require a response relating to the spread of fire. Therefore, a candidate should focus not only on the general topic area (eg, stress, fire) but also the specific aspect of that subject to which the question relates.

Candidates must also pay attention to the command word. For example, a question could ask candidates to **'identify'** the hazards associated with demolition work', or a question from the same element could ask candidates to **'outline'** the control measures required during demolition work'. Candidates appear to focus solely on the object of the question (demolition) and do not pay sufficient attention to the subject (hazards or control measures in the examples given) or the command word ('identify' or 'outline' in the examples given). There is often some confusion between hazard and risk. If a question requires an outline of hazards for a given situation, candidates must be careful not to provide risks, or even in some circumstances precautions, as they will not be able to attract marks.

Examiners suggest that while many candidates do begin their answer satisfactorily and perhaps gain one or two marks, they then lose sight of the question and include irrelevant information. Although further points included in an answer can relate to the general subject area, these points are not focused on the specific learning outcome and marks cannot be awarded. However, some candidates appear to misread or misinterpret several questions. This situation is more likely due to candidates preparing for the examination with a number of memorised answers obtained through rote-learning, that again can provide answers that are loosely associated with the subject matter but do not provide answers specific to the question. Such an approach is clearly evident to an Examiner and demonstrates little understanding of the subject matter and marks are not awarded.

Candidates are advised to allow sufficient time to read and re-read the question in order to determine the key requirements prior to committing their answer to paper. Preparing a time plan before the examination will indicate how many minutes are available for each question and then part of this time allocation can be given to reading the question. Underlining or highlighting key words can assist in keeping focused on the salient points and simple mind maps or answer plans can also be useful. Maps and plans should be kept simple so as not to use up too much examination time.

### Candidates did not respond effectively to the command word

A key indicator a question will be the command word, which is always given in **bold** typeface. The command word will indicate the depth of answer that is expected by the candidate and relates to the amount of detail that should be included in each point of the answer.

The learning outcomes in each element of all syllabus guides include the relevant command word that dictates the level of detail that should be covered in a course of study and the depth of answer that a candidate would be expected to provide in an answer to an examination question.

Examiners report that candidates continue to incorrectly observe the command words and therefore compromise their ability to gain the marks available. The majority of cases where command words are not observed relate to insufficient detail being given by a candidate in their examination answer. A significant number of candidates, irrespective of the command word given in the question, provide all answers in the form of a brief list of one or two words. This would normally not be sufficient to gain marks where the command word given was 'outline', 'explain' or 'describe', all of which require answers of more than one or two words.

Some candidates do provide too much information, which would not be required where a command word limits the expected answer to 'give' or 'identify'. Candidates would not be penalised for providing excessive detail but this would not be an efficient use of the time allocated.

Course providers should ensure that learning materials complement the command words in the syllabus guide and the NEBOSH guidance on command words and that sufficient time is given to advising candidates on suitable examination technique during a course of study.

### **Candidates unnecessarily wrote the question down**

Developing a time plan is a key element in preparing for an examination. Advice included on Certificate question papers suggests that 30 minutes should be allocated for the answer to the long 20-mark question, and 90 minutes should be allocated to the answers for the remaining ten, 8-mark short questions. Therefore there are around 9 minutes available to answer an 8-mark question. This time will be required for reading the question properly at least twice, developing an answer plan, and then committing the answer to paper while regularly referring back to the question in order to maintain focus. Therefore any inefficient use of this time should be avoided.

The efficient use of this time is essential in order to ensure that all questions can be answered within the 2 hours available. Many candidates feel it necessary to write out the question, in full, prior to providing their answer and although this practice will not lose marks it will lose valuable time. A significant number of candidates do not answer all of the questions in the time permitted and do not complete the question paper, some of whom obviously run out of time.

### **Candidates provided rote-learned responses that did not fit the question**

It is clear that there are a significant number of candidates who seem to recite answers in the examination that have been rote-learned in advance and do not answer the question.

While knowledge of material forms a part of the study for a Certificate-level qualification, a key aspect being assessed is a candidate's **understanding** of the subject and reciting a pre-prepared and memorised answer will not show a candidate's understanding. In fact, if a candidate gives a memorised answer to a question that may look similar, but actually is asking for a different aspect of a topic in the syllabus, it shows a lack of understanding of the subject and will inevitably result in low marks being awarded for that answer.

### **Candidates repeated the same points but in different ways / Candidates provided the same answer to different questions**

There are instances where candidates repeat very similar points in their answers, sometimes a number of times. This is easily done in the stressful environment of the examination. However, once a point has been successfully made and a mark awarded for it, that mark cannot be awarded again for similar points made later in the answer.

Candidates are advised to practise examination technique in their preparations to avoid this kind of pitfall. Writing an answer plan where points can be ticked off when made, or structuring an answer so that each point made is clearly shown, for example by underlining key points, can be of great use. This technique aids candidates and makes it much clearer in the stress of the examination for candidates to see which points have been made and reduce the chances of the same point being made several times.

### **Candidates did not answer all of the questions**

It has been noted that a number of candidates do not attempt all of the questions and of course where a candidate does not provide an answer to a question, no marks can be awarded. This seriously affects the potential marks available and the possibility of achieving a pass. Course providers must emphasise the importance of attempting all questions in order to maximise the opportunity to attract marks.

There can be several reasons for this issue: running out of the allocated time for the examination, not knowing the answer to the question, or forgetting to answer a question.

Questions can be answered in any order and answers can be written in any order in the answer book provided. Candidates are advised to clearly keep track of questions they have attempted, such as

marking them on the question paper that would minimise the risk of inadvertently missing a question to answer.

If the subject of the question is unfamiliar or the answer is not known, then it will be challenging to provide an answer. This can result from rote-learning and preparing for an examination with a number of memorised answers, or simply not being adequately prepared for the examination across the breadth of the syllabus. There is always the risk of a candidate 'going blank' in an examination situation, in which case candidates should be prepared with some techniques to help. Rather than trying to remember what was taught or what has been read, ask yourself 'what would I do, in this situation?'. Reference to personal application or experience is sometimes enough to stimulate an answer that otherwise may have been missed. Alternatively, candidates can go back to first principles and break a question down into elements such as 'people', 'equipment', 'materials' and the 'working environment'. Approaching a question in small sections can minimise the risk of being overwhelmed by it as a whole.

Running out of time can be avoided by having an examination time plan and working to it. The question paper advises that you should spend 30 minutes on the long answer (question 1) and 90 minutes on the remaining ten short answer questions. This will provide around 9 minutes per short answer, follow the clock and when the time per question has expired, move on. Answering a question partly is better than not answering at all.

### **Candidates did not allocate enough time to the question / Time management**

In a number of cases question 1 is left until last or later in the question paper and does not appear to be answered completely. Other candidates appear to rush the last one or two questions by providing very brief or bullet point answers, even when these questions require an outline. This indicates a lack of time management. It is advised that course providers and candidates spend time developing the skill of writing answers to questions bearing in mind the number of marks and time available. A 20-mark question requires significantly more detail than an 8-mark question.

Candidates might benefit from writing abbreviations to save time and to recognise that there is no need to write out the question at the beginning of their answer. Standard abbreviations such as HSE, RIDDOR, COSHH, PPE and DSE are acceptable.

### **Candidates' handwriting was illegible**

Sometimes Examiners have difficulty in reading the handwriting of some candidates. Although allowances are made for candidates under the pressure of an examination, course providers must remind candidates that their writing needs to be legible or valuable marks may not be picked up during marking.

There is a minimum literacy requirement for candidates on NEBOSH qualifications. As stated in the syllabus guides the standard of English required by candidates studying for Certificate level must be such that they can both understand and articulate the concepts contained in the syllabus.

NEBOSH recommends to accredited course providers that candidates taking this qualification should reach a minimum standard of English equivalent to an International English Language Testing System score of 6.0 or higher in IELTS tests in order to be accepted onto a Certificate level programme.

For further information please see the latest version of the IELTS Handbook or consult the IELTS website: [http://www.ielts.org/institutions/test\\_format\\_and\\_results.aspx](http://www.ielts.org/institutions/test_format_and_results.aspx)

Candidates wishing to assess their own language expertise may consult the IELTS website for information on taking the test: <https://www.ielts.org/>

Course providers are reminded that they must ensure that these standards are satisfied or additional tuition provided to ensure accessible and inclusive lifelong learning.

## Command words

Please note that the examples used here are for the purpose of explanation only.

### Outline

The command word 'outline' is by far the most challenging for candidates. Referring to the NEBOSH guidance on command words available on the NEBOSH website, 'outline' means *"To indicate the principal features or different parts of"*.

Many candidates do not give sufficient detail in order to warrant an 'outline' answer. The NEBOSH guidance on command word states that *"an exhaustive description is not required. What is sought is a brief summary of the major aspects of whatever is stated in the question"*.

If the use of the command word in everyday language or conversation is considered it may help the candidate understand what is required. If asked to '**outline** the risks to an operator when manually closing a valve' an answer such as 'cuts, bruises, burns and strains' would be insufficient as this represents a listed answer. However, 'cuts from contact with sharp edges of the hand wheel, bruises from impact with adjacent plant items, burns from contact with adjacent uninsulated pipe work and strains from using excessive force' would be sufficient.

### Explain

The command word 'explain' requires the candidate to provide an understanding of the subject of the question and will usually be used in conjunction with 'why' or 'how'. Such as '**explain** how an interlocked guard operates' or '**explain** why a forklift truck may overturn'.

Some candidates approach an 'explain' question the same as an 'outline' and provide a number of individual points rather than providing an explanation as to how something operates or why something occurs. While some candidates do answer such questions sufficiently and satisfactorily, other candidates have difficulty in explaining in a logical sequence and many repeat the same point.

### Identify

'Identify' questions require the name or title of an item, such as, '**identify** the effects of electricity on the human body', or '**identify** the features of a vehicle route'. In most cases one or two words will be sufficient and further detail will not be required to gain the marks.

For example, if asked to '**identify** types of equipment found in an office' appropriate answers could be personal computer, printer, telephone, photocopier, etc. There would be no need to embellish those points with a description of the equipment or its function.

However, in contrast to 'outline' answers being too brief, many candidates feel obliged to expand 'identify' answers into too much detail, with the possible perception that more words equals more marks. This is not the case and course providers should use the NEBOSH guidance on command words within their examination preparation sessions in order to prepare candidates for the command words that may arise.

### Describe

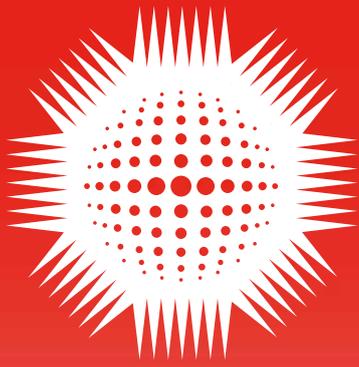
The command word 'describe' clearly requires a description of something. The NEBOSH guidance on command words says that 'describe' requires a detailed written account of the distinctive features of a topic such that another person would be able to visualise what was being described.

If asked to describe the clock in the examination room, a person would have little difficulty in doing so and would most probably refer to its shape, its size, the colour of the clock and the style of numerals. Answers to such a question would almost certainly not result in general unconnected information about clocks, the history of clocks, or an explanation of why the clock is present in the room. Candidates should consider the general use of the command word when providing examination answers.

## **Give**

'Give' questions require a statement that is relevant to the subject asked for in the question but additional explanation is not required. Often, 'give' questions ask for the meaning of a particular term. While detailed explanation of the application of the term would not be required, a correct knowledge of the term itself is needed in order for the Examiner to award marks.

For additional guidance, please see NEBOSH's '*Guidance on command words used in learning outcomes and question papers*' document, which is available on our website: [www.nebosh.org.uk/students/default.asp?cref=1345&ct=2](http://www.nebosh.org.uk/students/default.asp?cref=1345&ct=2).



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