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# Examiners' Report

## UNIT ED1: MANAGING ENVIRONMENTAL RISK

JANUARY 2019

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For: **NEBOSH National Diploma in Environmental Management**  
**NEBOSH International Diploma in Environmental Management**

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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 the standard date examination sitting in January 2019.

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 National Diploma in Environmental Management' / the 'Guide to the NEBOSH International Diploma in Environmental Management' which are available via the NEBOSH website. In particular, the guide sets out in detail the syllabus content for ED1 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.

## Unit ED1

### Management of environmental risk

- Question 1** ISO 14001:2015 requires an organisation to determine its environmental aspects and associated environmental impacts. Significant aspects and impacts need to be addressed by the environmental management system.
- (a) **Explain** how environmental aspects and impacts should be identified. (12)
- (b) **Explain** how the significance of environmental aspects and impacts can be evaluated. (8)

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This question assessed candidates' knowledge and understanding of learning outcome 4.1: Explain the principles of environmental aspect identification.

Part (a) required candidates to explain how environmental aspects and impacts should be identified. Aspects are identified by considering an organisation's products, activities and services. The impacts associated with each aspect can then be determined, and marks were available for detail at each stage. Many candidates had difficulty in explaining this process and appeared to be only vaguely familiar with the requirements as stated in ISO 14001:2015.

Part (b) then asked candidates to explain how the significance of environmental aspects and impacts can be evaluated. Some candidates gained marks for stating that criteria first needs to be established, in order to then evaluate each aspect and impact against these criteria. Some gave examples of how scoring of aspects may be applied. Many candidates found it challenging to explain this process and again did not appear to be fully aware of the relevant parts of ISO14001:2015.

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- Question 2**
- (a) **Outline** what is meant by the term '*biodiversity*'. (6)
- (b) **Explain** why maintaining biodiversity is important. (14)

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This question assessed candidates' knowledge and understanding of learning outcome 1.2: Explain the general effects that human activity has on the environment (including understanding of key terminology).

For part (a) most candidates correctly stated that the term '*biodiversity*' refers to the variation in life forms. However, few referred to the types of variation, such as genetic, species and ecosystem.

In part (b) most candidates correctly identified that biodiversity has both value as an economic and cultural resource, and for the function that life forms have in regulating environmental systems. However, many candidates gained only limited marks on this section due to their answers being restricted in both breadth and depth. For example, few candidates referred to the role that diverse ecosystems play in maintaining water quality and soil formation. Some candidates only briefly stated issues rather than explaining their importance. Candidates must ensure that they respond to command words if they are to gain full marks.

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**Question 3** A food manufacturing organisation uses a large amount of hydrochlorofluorocarbons (HCFCs) in its refrigeration systems. The organisation intends to replace the HCFCs and is considering a new system that uses ammonia as a refrigerant.

- (a) **Identify** the main environmental issues associated with the use of HCFCs. (2)
- (b) **Outline** what the organisation should include in its assessment of the potential new system. (18)
- 

This question assessed candidates' knowledge and understanding of learning outcomes 8.1: Outline the types of emissions to atmosphere and the harm to the environment from specific pollutants; 4.1: Explain the principles of environmental aspect identification; and 4.2: Explain the principles of operational planning and control relating to the organisation's significant environmental aspects.

Many candidates gained full marks for part (a) for correctly identifying that HCFCs have a role in both global warming and ozone depletion. Part (b) gave candidates an opportunity to outline what the organisation should consider in assessing a change to ammonia. Most answers included major business considerations such as the capital and revenue costs of the change, but many answers were generally limited in breadth. Marks were available for considering impacts of a new system, such as costs and training requirements, as well as for noting issues relating specifically to the use of ammonia – both positive and negative. It was noted that many candidates did not provide enough points in their answer to be awarded high marks. The number of marks available will give a candidate an indication of how wide an answer should be to achieve full marks.

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**Question 4** There has been a major fire at a chemical products storage warehouse.

- (a) **Outline** environmental impacts that could be caused by the fire. (8)
- (b) **Identify** what should be in place to prevent or minimise environmental damage from fire-fighting water runoff at the site. (12)
- 

This question assessed candidates' knowledge and understanding of learning outcomes 3.5: Outline the requirements of emergency plans for an organisation, including their development, monitoring and maintenance; 4.1: Explain the principles of environmental aspect identification; 4.2: Explain the principles of operational planning and control relating to the organisation's significant environmental aspects; and 9.1: Outline the types of pollutants/effluents likely to be discharged to the water environment.

Most candidates gained good marks in part (a) by correctly identifying a range of environmental impacts, such as pollution of the atmosphere or fire water runoff causing water pollution or land contamination. Answers to part (b) were also generally good; better answers outlined such factors as bunds around storage and drainage protection, as well as having suitable emergency plans in place.

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**Question 5** An organisation is proposing to develop a large, new corporate office building.

**Describe** what could be included in the *design* of the new building to minimise its impact upon the environment. **(20)**

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This question assessed candidates' knowledge and understanding of learning outcomes 12.2: Explain the need for clean energy efficiency; 7.1: Explain the need for responsible waste management; 6.1: Explain the principles of environmental sustainability; 4.4: Outline the purpose of an environmental impact assessment and environmental statement in relation to large developments; and 1.2: Explain the general effects that human activity has on the environment (including understanding of key terminology).

Many candidates' answers related to the same considerations, such as energy efficiency, construction impacts, water management and transport. Marks were available for a wide range of large and small-scale design features, from window placement to use of sensor taps. Candidates should ensure that they consider the full range of potential impacts and ways these could be addressed.

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**Question 6** A manufacturing organisation is concerned about rising waste disposal costs.

**Outline** a strategy for reducing waste costs without the need for high initial spending. **(20)**

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This question assessed candidates' knowledge and understanding of learning outcomes 7.1: Explain the need for responsible waste management; 7.2: Describe the benefits of waste management; and 7.3: Outline the requirements to monitor waste.

This question required candidates to demonstrate their understanding of the elements of a strategy, in this case in relation to waste costs. Better answers were structured into planning, implementation and then monitoring and review, with actions at each stage. For example, under planning, good answers mentioned first establishing current waste quantities and costs, before identifying actions that could be taken. This could include targets for waste reduction as well as comparing costs between waste contractors.

While this was a relatively popular question, some answers focused only on practical measures that could be taken to manage waste on site, rather than on the elements of a strategy as per the question; this limited breadth restricted the marks that could be awarded.

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- Question 7** BS EN ISO 14001:2015 requires organisations to establish environmental objectives.
- (a) **Explain** what is meant by the term environmental objectives. (8)
  - (b) **Explain** how an organisation should set *targets*. (6)
  - (c) **Outline** actions that could be taken if a *target* is unlikely to be achieved within the specified time period. (6)
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This question assessed candidates' knowledge and understanding of learning outcome 3.1: Explain the purpose, benefits, limitations and structure of an environmental management system.

Many candidates found this question challenging.

Part (a) required candidates to explain what environmental objectives are. Most answers identified that objectives are overall results to be achieved, and that they link to an organisation's aspects and impacts. Few answers included reference to the link with risks and opportunities or to compliance obligations.

For part (b) many candidates were unable to explain how an organisation should set targets. Better answers explained that targets could be based on current or past performance and should be achievable based on identified actions. Marks were also awarded for noting the importance of considering resources and allocation of responsibilities.

Many candidates gained at least half marks for part (c) by outlining what to do if a target is unlikely to be achieved. Most answers included reviewing performance data, and considering ways to either improve performance, or revise the target.

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- Question 8** Environmental modelling can be used to predict ground level air pollution caused by emissions from a chimney.
- (a) **Describe** the main stages that are followed when using an air pollution dispersion model. (15)
  - (b) **Outline** limitations of air pollution dispersion modelling. (5)
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This question assessed candidates' knowledge and understanding of learning outcome 4.3: Explain the techniques for evaluating environmental aspects arising from workplace activities.

Many answers to part (a) were limited and did not adequately describe the main stages in using an air pollution dispersion model. Answers should have covered the relevant data used as inputs – such as meteorological information, and background air quality data – which are then processed by the model to produce the predicted pollution. Better answers also included analysing the outputs, as this is a key part of environmental modelling. It was evident that many candidates in this sitting had chosen to answer this question despite having very little familiarity with modelling.

Outlining the limitations of air pollution dispersion modelling in part (b) also seemed to prove challenging for some candidates. Candidates gained marks for stating that the accuracy of input data will affect the accuracy of results. Some answers included reference to the problems of modelling in complex terrains, or in accessing relevant meteorological data.

## **Examination technique**

The following examination techniques were identified as the main areas of improvement for candidates:

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

A number of candidates do not appear to understand the differences in depth and breadth associated with different command words. In particular 'outline' and 'describe' appear to be poorly understood. Some candidates do not give enough detail when answering this type of question. For example an 'outline' answer should give a brief overview and should not be limited to a simple list.

Conversely questions based on 'identify' or 'outline' can illicit lengthy answers covering several sentences, when in fact short answers would have sufficed. This means that candidates waste time and effort for no additional credit.

Course providers should ensure that candidates understand the importance of command words in determining the depth and breadth of information required in answers.

### **Candidates misread/misinterpreted question**

Examiners reported that a significant number of candidates either misread or misinterpret some of the questions. It appears that those candidates who have difficulty are 'question-spotting', seeing a key word or phrase and answering the question based on that, rather than thoroughly reading the question and answering what was set. Consequently, some candidates produce answers that contain information that is either irrelevant and/or out of context, such as addressing waste and water use minimisation in a question on energy use.

On several questions, candidates extended their answers to cover points outside of the question. This could indicate that they had not thoroughly read the question before attempting it, or that they misinterpreted the question as something similar they had previously seen.

Rather than rushing into an answer, some candidates might improve their performance by producing a short answer plan and then pausing for a few seconds, to confirm in their minds that this is what the question is really asking.

Course providers should ensure that candidates are taught how to read and analyse questions so that they are clear exactly what information is likely to gain marks.

### **Candidates repeated the same point but in different ways**

Candidates occasionally produce several paragraphs that all address the same point but in different ways. This tends to indicate that they have not planned their answers carefully. Examiners can only give marks once. No additional marks will be available for re-stating a point several times.

For example, outlining 'recycling' as a way of reducing disposal costs for waste, but then repeating this several times for different waste types, such as introducing paper recycling in offices or recycling manufacturing waste as different points. Such practice might expand the answer where breadth of knowledge is limited but gains no extra marks. Repetition also wastes precious examination time.

Course providers should encourage candidates to plan their answers in advance of writing to avoid repetition. Candidates should be encouraged to practice examination technique, and in particular structuring answers using a simple plan, so as to ensure that their answers follow a logical structure and avoid covering a topic more than once.



**Candidates produced an incoherent answer**

Candidates sometimes stray into areas outside the question and waste time and effort in producing confusing answers addressing matters not relevant to the question, such as detailing statutory nuisance on a civil law question.

Candidates should be taught to limit their answers to only the topic detailed in the question.

**Candidates did not follow specific instructions**

Where a question instructs that a candidate produces an answer in a specified form, such as a brief, marks cannot be awarded if answers are not in the specified form.

Candidates should be taught how to present and structure their answers in common formats, such as a memorandum or a brief.

## Command words

The following command words are listed in the order identified as being the most challenging for candidates:

### Describe

*Describe: To give a detailed written account of the distinctive features of a topic. The account should be factual without any attempt to explain.*

Many candidates outline without giving adequate content for a 'describe' question. A typical description should cover more than the outline of the point being made. The command word 'describe' requires that candidates provide distinctive features of the particular syllabus learning outcome being assessed but do not need to provide extensive information on that topic. Candidates occasionally respond to 'describe' by completing a full page of text without actually responding with the distinctive features associated with the question topic. Candidates need to distinguish between 'outline' and 'describe' and not respond with a series of unconnected points generally related to the topic in the question. If a candidate was asked to describe a control strategy aimed at the prevention of environmental pollution, the inclusion of monitoring of airborne concentrations and emissions that include estimates of losses by mass balances would satisfy the command word.

### Explain

*Explain: To provide an understanding. To make an idea or relationship clear.*

When a question specifies 'explain' the candidate is required to provide an understanding or make clear an idea or relationship. For example '**explain** the cradle to grave concept'; if a candidate responded with 'takes into account inputs and outputs, considers environmental costs and uses equivalences; then this constitutes an outline but **not** an explanation. This would be insufficient to merit full marks as this does not provide a deep enough understanding or relationship from the specified command word or the context in which the question is asked. However, if a candidate responded in greater depth, for example 'a life cycle analysis study taking into account an inventory of all inputs and outputs; supply, manufacturing and waste impacts would be taken into account; environmental costs or obstacles would be added in at all stages along the way with interpretation through evaluation of these identified stages and alignment with the scope of the study'; then this would merit the awarding of further marks.

### Outline

*Outline: To indicate the principal features or different parts of.*

An 'outline' requires a brief summary on each point. Examiners report that the command word 'outline' challenges many candidates. Insufficient detail is provided in response to the principal features or parts of the topic matter requested when 'outline' is specified in the question. Exhaustive descriptions are not required for 'outline' but limited answers like single words or listed answers do not satisfy the command word requirements.

If asked to '**outline** the information that should be included in an environmental report following an environmental assessment', significant effects on the environment, including short, medium and long-term effects would be an example of an adequate 'outline' response.

Breadth is important in an outline question. Some candidates give far too much detail for a relatively small number of points. Candidates should be aware that for an outline question, the number of marks available for each distinct point is limited, and no additional marks can be given for lengthy detailed responses.

## **Identify**

*Identify: To give a reference to an item, which could be its name or title.*

When providing a response to 'identify' the selection and naming of an answer that relates to the question should be sufficient. In most cases one or two words would be sufficient to be awarded corresponding marks. Any further detail would not be required and impacts negatively on the time limit for completing the examination. If the use of the command word in everyday language or conversation was considered it may help the candidate understand what was required. For example, if the question was '**identify** types of kitchen appliances', 'toaster, kettle and microwave' would be suitable responses for the 'identify' command word.

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: <https://www.nebosh.org.uk/i-am/a-student/> - from this page the document can be found by clicking on the relevant Qualification link, then on the 'Resources' tab.