Examiners' Report

UNIT ED1:
MANAGING ENVIRONMENTAL RISK

JULY 2018

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

CONTENTS

Introduction

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

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 July 2018 for the 2016 specification.

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   (a)   **Define** the term *'sustainability'*.   **(2)**

                (b)   **Describe** the *'five capitals'* of sustainability.   **(18)**

This question assessed candidates' knowledge and understanding of learning outcome 6.1: Explain the principles of environmental sustainability.

Part (a) required candidates to give the accepted definition of *'sustainability'* from the Rio Earth summit. Candidates did not have to give exact word-for-word answers but needed to refer to both present and future generations, with both being able to meet their developmental and environmental needs.

Part (b) was around the five capitals of sustainability: Natural, Social, Human, Financial, and Manufactured/built. Some candidates named these, but did not provide enough in their response to be awarded higher marks. The command word for this part of the question was 'describe', indicating that more detail was expected from candidates in their answers. For example, 'Human capital' refers to people's health, knowledge, and skills. It leads to productivity and can be enhanced by education.

Question 2   (a)   **Outline** what should be considered in the selection of suitable risk control measures to minimise risks to the environment from an industrial process.   **(12)**

                (b)   **Outline** control measures that could be used to minimise noise nuisance arising from process machinery.   **(8)**

This question assessed candidates' knowledge and understanding of learning outcomes 4.2: Explain the principles of operational planning and control relating to the organisation's significant environmental aspects; and 10.2: Outline control strategies and methods for the control of environmental noise.

Many candidates achieved good marks on this question overall. However, it was clear from their answers that some had not read the question correctly. Some responses to part (a) referred to potential environmental impacts, or specific examples of a control measure that could be used. The question asked what should be considered and so marks were given for considering potential costs involved, the efficiency of the control, or if there were any implications of a permit, that would also need to be taken into account.

Answers to part (b) generally were awarded more marks as candidates were able to outline several examples of control measures that could minimise noise nuisance. A variety of answers were given that covered options at source, pathway modification and receptor protection.

Question 3 (a) **Outline** the hydrological cycle.   **(8)**

(b) **Describe** how human activity may cause changes to the
hydrological cycle.   **(12)**

This question assessed candidates' knowledge and understanding of learning
outcomes 1.1: Explain the meaning of the environment and the earth's key natural
cycles; and 1.2: Explain the general effects that human activity has on the environment
(including understanding of key terminology).

This question was well-answered; the majority of candidates were able to give a suitable
overview of the hydrological cycle in order to gain marks in part (a). More marks were
available for those responses that outlined the simultaneous pathways of water into
oceans, whether via groundwater, or in surface waters. Appropriate diagrams to help
illustrate the cycle were also awarded marks, where they were included.

Part (b) required candidates to apply their knowledge of environmental impacts to the
context of the hydrological cycle. Marks were awarded for examples of direct human
activity, such as storage of water in reservoirs (which can increase evaporation), as well
as for larger-scale activity like changes in land use for urban development (which affects
groundwater distribution).

Some answers incorrectly referred to pollution, which affects water quality rather than
the cycle itself.

Question 4 **Explain** the advantages and disadvantages of the following forms of
renewable energy:

(a) wind power;   **(5)**

(b) solar photovoltaic power;   **(5)**

(c) tidal power;   **(5)**

(d) biofuels.   **(5)**

This question assessed candidates' knowledge and understanding of learning outcome
12.1: Explain the advantages and disadvantages of different sources of energy.

This question allowed candidates to demonstrate their knowledge on a range of energy
sources. There were many strong responses given regarding wind, solar photovoltaic,
and tidal power, with a range of environmental, financial, and logistical advantages
explained. Disadvantages were also explained, including high initial costs for some
installations, limited suitable locations, and the consistency of the energy supply.

Overall, candidates seemed to be less familiar with biofuels. In particular, some
candidates were unable to relay the disadvantages of crops grown for fuel, such as the
resources used in large-scale agriculture, ongoing costs, or the wider impacts of land
take. Renewable energy sources are largely considered to have a lower environmental
impact than fossil fuels, but it is important for practitioners to have a well-rounded
knowledge of their implications.

Question 5   **Describe** the four main stages in carrying out a life cycle analysis.   **(20)**

This question assessed candidates' knowledge and understanding of learning outcome 4.3: Explain the techniques for evaluating environmental aspects arising from workplace activities.

It was clear from the answers given which candidates had been taught the stages of a life cycle analysis. These candidates could name each stage as well as provide varying amounts of detail for each, for marks to be awarded. Those candidates who were not familiar with the process itself responded with stages in a life cycle (raw material sourcing, manufacture, usage) rather than the technique for analysis.

A life cycle analysis begins with defining the scope of analysis and the goals aimed for. Inputs and outputs are then recorded during the inventory analysis, which leads on to the impact assessment stage. Finally, results are summarised and evaluated in order to give recommendations.

Question 6   (a)   **Outline** what should be considered when assessing the risk of flooding.   **(10)**

    (b)   **Outline** potential consequences for a manufacturing facility from a flood event.   **(10)**

This question assessed candidates' knowledge and understanding of learning outcome 9.5: Outline the risks associated with flooding and appropriate control measures.

Part (a) of this question was well answered with candidates outlining a variety of considerations, from identifying the potential sources of a flood, looking at historical records, or using a model. Potential flood risk can also be affected by the existing controls that are in place on-site, or the local/national emergency response which is external to an organisation.

Part (b) asked for potential consequences of a flood, and suitable answers included direct damage to property, or potential income loss due to shutdown. Indirect effects were also outlined, such as transport being disrupted – affecting both goods and workers themselves. Marks were also awarded for consequences after the flood itself, including a potential increase in insurance premium for an organisation.

Question 7   Many organisations produce corporate environmental reports.

    (a)   **Identify** reasons for organisations to publish reports on their environmental performance.   **(6)**

    (b)   **Outline** content that should be included in an annual report on environmental performance.   **(8)**

    (c)   **Outline** the benefits of using benchmarks when reporting on environmental performance.   **(6)**

This question assessed candidates' knowledge and understanding of learning outcome 3.2: Outline methods of presenting information on environmental management performance, including communication to stakeholders, and the use of benchmarking.

There are several reasons for publishing environmental performance reports, and candidates were able to identify a good range of examples in their answers to part (a).

Reporting is a legal requirement for some organisations, and it is often part of an EMS or other scheme. Publishing a report is also a good opportunity to promote environmental objectives and demonstrate progress, as well as demonstrating transparency.

Part (b) of the question was also well answered as most candidates outlined a variety of potential content. Marks were available for examples such as performance against targets, or inclusion of specific environmental policies. A report may also include an overview of the organisation's significant aspects, or highlight areas of focus for the time period reported on. To answer this question it may help candidates to consider the potential audience for such a report (customers, shareholders, competitors) in order to recognise what content would be useful for those interested parties.

Part (c) focused on benchmarks and their benefits in reporting. Some candidates' answers discussed benchmarking but did not note the benefits of their use, as asked in the question. Benchmark data can help to give context to performance figures, as it is often specific to an industry or process. Some benchmarks relate to national or international targets and can therefore help an organisation to demonstrate that they are contributing to wider improvements in environmental management.

Question 8   **Outline** how an organisation can manage competency.   **(20)**

This question assessed candidates' knowledge and understanding of learning outcome 2.5: Outline how levels of competence can be managed by an organisation.

This question asked about managing competency, which is a key factor of an environmental management system and a requirement of ISO 14001:2015. In practice this will generally follow a process of determining competency requirements for specific roles, and considering the existing people in those roles in order to identify training needs. Development is often ongoing and so marks were available for covering the evaluation of competence via audit or appraisal, as well as the overall need to retain documented evidence of information at each stage. Some candidates only gave brief answers with types of training, or mentioning the use of a competency matrix, and so only limited marks could be awarded.

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 loses 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.