

March 2013

Examiners' Report NEBOSH Certificate in Environmental Management (EC1)



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Examiners' Report

NEBOSH CERTIFICATE IN ENVIRONMENTAL MANAGEMENT

UNIT EC1: MANAGEMENT AND CONTROL OF ENVIRONMENTAL HAZARDS

MARCH 2013



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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 35,000 candidates annually and are offered by over 500 course providers, with exams taken in over 100 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 to be recognised and regulated by the Scottish Qualifications Authority (SQA).

Where appropriate, NEBOSH follows the latest version of the “GCSE, GCE, *Principal Learning and Project Code of Practice*” published by the regulatory authorities in relation to examination setting and marking. While not obliged to adhere to this code, NEBOSH regards it as best practice to do so.

Candidates’ scripts are marked by a team of Examiners appointed by NEBOSH on the basis of their qualifications and experience. The standard of the qualification is determined by NEBOSH, which is overseen by the NEBOSH Council comprising nominees from, amongst others, the Health and Safety Executive (HSE), the Confederation of British Industry (CBI), the Trades Union Congress (TUC) and the Institution of Occupational Safety and Health (IOSH). Representatives of course providers, from both the public and private sectors, are elected to the NEBOSH Council.

This report on the examination provides information on the performance of candidates which it is hoped will be useful to candidates and tutors 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 always some 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.

In order to meet the pass standard for this assessment, acquisition of knowledge and understanding across the syllabus are prerequisites. However, candidates need to demonstrate their knowledge and understanding in answering the questions set. Referral of candidates in this unit is invariably because they are unable to write a full, well-informed answer to one or more of the questions asked.

Some candidates find it difficult to relate their learning to the questions and as a result offer responses reliant on recalled knowledge and conjecture and fail to demonstrate a sufficient degree of understanding. Candidates should prepare themselves for this vocational examination by ensuring their understanding, not rote-learning pre-prepared answers.

Candidates should therefore note that Examiners' Reports are **not** written to provide 'sample answers' but to give examples of what Examiners were expecting and more specifically to highlight areas of under performance.

Common pitfalls

It is recognised that many candidates are well prepared for their assessments. However, recurrent issues, as outlined below, continue to prevent some candidates reaching their full potential in the assessment.

- Many candidates fail to apply the basic principles of examination technique and for some candidates this means the difference between a pass and a referral.
- In some instances, candidates do not attempt all the required questions or are failing to provide complete answers. Candidates are advised to always attempt an answer to a compulsory question, even when the mind goes blank. Applying basic health and safety management principles can generate credit worthy points.
- Some candidates fail to answer the question set and instead provide information that may be relevant to the topic but is irrelevant to the question and cannot therefore be awarded marks.
- Many candidates fail to apply the command words (also known as action verbs, eg describe, outline, etc). Command words are the instructions that guide the candidate on the depth of answer required. If, for instance, a question asks the candidate to 'describe' something, then few marks will be awarded to an answer that is an outline. Similarly the command word 'identify' requires more information than a 'list'.
- Some candidates fail to separate their answers into the different sub-sections of the questions. These candidates could gain marks for the different sections if they clearly indicated which part of the question they were answering (by using the numbering from the question in their answer, for example). Structuring their answers to address the different parts of the question can also help in logically drawing out the points to be made in response.
- Candidates need to plan their time effectively. Some candidates fail to make good use of their time and give excessive detail in some answers leaving insufficient time to address all of the questions.
- Candidates should also be aware that Examiners cannot award marks if handwriting is illegible.
- Candidates should note that it is not necessary to start a new page in their answer booklet for each section of a question.

UNIT EC1

Management and control of environmental hazards

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- Question 1** (a) **Outline** why an environmental emergency response plan is advisable for large manufacturing sites. (10)
- (b) **Outline** the information that should be contained in an emergency response plan and the information that should be available to support the plan. (10)
-

This question related to Element 9 of the syllabus and assessed candidates' knowledge of learning outcomes 9.1: *Explain why emergency preparedness is essential to protect the environment* and 9.2: *Describe the measures that need to be in place when planning for emergencies*.

This question offered candidates an opportunity to cover much of the content of element 9. Most candidates gave very good answers to part (a). A few candidates struggled to give much more than the need for a plan to enable rapid response to minimise damage. However, most candidates picked up the legal requirements, and most candidates managed to gain at least half of the available marks by ranging over the remaining main points.

Part (b) was generally answered to a better standard than part (a).

Candidates regularly do better on the content of an emergency plan rather than the other issues around emergency planning and these other areas of this part of the syllabus need to be recognised in the question and answered appropriately.

- Question 2** **Outline** why deforestation is seen as an environmental concern. (8)
-

This question related to Element 1 of the syllabus and assessed candidates' knowledge of learning outcome 1.1: *Outline the scope and nature of environmental management*.

Deforestation is one of the listed problem issues in the syllabus and candidates are expected to understand why it is such. The main concerns are around the impact on the biota and air, land and water. This question presented few problems for most candidates.

- Question 3** **Outline** the information required by an auditor conducting an audit of the environmental performance of a unit within a chemical production site. (8)
-

This question related to Element 2 of the syllabus and assessed candidates' knowledge of learning outcome 2.2: *Describe the key features and appropriate content of an effective EMS ie ISO 14001*.

Environmental auditing is a part of element 2.2 and an auditor would be expected to collect information about the environmental performance of the site. Similar information such as the use of resources, outputs and site events would be required from most industrial sites. Most candidates were able to identify a good number of such pieces of information which might be required by an auditor.

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- Question 4** (a) *Environmental impacts can be direct or indirect.*
- Outline** the difference between these using an example to illustrate **EACH**. (4)
- (b) *Environmental impacts can be positive or negative.*
- Outline** the difference between these using an example to illustrate **EACH**. (4)
-

This question related to Element 3 of the syllabus and assessed candidates' knowledge of learning outcome 3.2: *Describe the types of environmental impact. Direct and indirect and positive and negative impacts are specifically mentioned.*

Overall, most candidates had no problems in coming up with examples. However, many candidates struggled to provide a satisfactory outline of the difference between direct and indirect impacts for part (a), although they came up with suitable examples.

For part (b) many candidates forgot to actually outline the difference between positive and negative impacts and just gave examples, thereby losing two marks. Most candidates had no problems in giving suitable examples.

- Question 5** (a) **Identify** the main sources of noise from an industrial estate. (4)
- (b) **Outline** how noise from the industrial estate could be prevented from interfering with neighbouring residents. (4)
-

This question related to Element 8 of the syllabus and assessed candidates' knowledge of learning outcomes 8.1: *Describe the potential sources of environmental noise and their consequences* and 8.2: *Outline the methods available for the control of environmental noise.*

Most candidates provided more than eight marks worth of points. Note that part (b) was an outline question requiring more detail than part (a). Suggestions made for part (b) included carrying out monitoring of the noise levels and engaging in a dialogue with the neighbours but neither of these would directly reduce the noise. It pays to read the question carefully and think about the relevance of the answer.

- Question 6** **Identify** the air pollutants that could be released to the atmosphere from the following sources:
- (a) *a coal-fired power station;* (4)
- (b) *a paint-spraying process;* (2)
- (c) *a diesel-fuelled forklift truck.* (2)
-

This question related to Element 4 of the syllabus and assessed candidates' knowledge of learning outcome 4.2: *Outline the main types of emissions to atmosphere and the associated hazards.*

In part (a), some candidates lost marks by not being specific (eg sulphur or nitrogen compounds rather than the oxides). It should also be noted that an efficient burner will not produce carbon monoxide, for which no marks were available. No marks were available for steam / water vapour which are emitted but would not be considered as pollutants. A few candidates erroneously mentioned smog as a discrete pollutant.

In part (b), many candidates mentioned CFCs used as a propellant, for which no marks were available as this use of CFCs is no longer permitted. Also, no marks were available for lead from lead based paints as lead based paints have been phased out. Most candidates were awarded one mark for VOCs, but many candidates struggled to get the second mark.

Most candidates were awarded both marks for part (c) although quite a few candidates mentioned oxides of sulphur, for which a mark was not be given as most diesel fuel has been sulphur free for several years.

Question 7 *During a routine inspection of a manufacturing site an external storage tank containing fuel oil was found not to have a bund.*

Outline the features that should be included in the design of a suitable bund for the tank. **(8)**

This question related to Element 5 of the syllabus and assessed candidates' knowledge of learning outcome 5.3: *Outline the main control measures that are available to reduce contamination of water sources.*

Bunding is mentioned in the section that elaborates outcome 5.3 and the question was about the design features of the bund, not the tank inside. The question was well answered by most candidates although a few candidates discussed aspects of the tank itself (eg sight glasses) for which no marks were available. This stresses again the need to read the question carefully.

Question 8 *Identify the main ways in which contaminated land can pollute the environment.* **(8)**

This question related to Element 6 of the syllabus and assessed candidates' knowledge of learning outcome 6.5: *Outline the risks associated with contaminated land.*

Most candidates provided good answers to this question. It is directly mentioned in the syllabus and it was the effects on air, water and biota that were being sought.

Question 9 *Identify eight options available to an organisation in order to minimise the impact of carbon dioxide emissions from road transport.* **(8)**

This question related to Element 7 of the syllabus and assessed candidates' knowledge of learning outcome 7.4: *Outline the control measures available to enable energy efficiency.*

Transport is one of the users of energy referred to in the syllabus. The options available extend beyond the use and management of the vehicles themselves, including how goods and people are managed and the alternatives to fossil fuel driven vehicles. Most candidates provided good answers. A few candidates mentioned the use of catalytic converters – these minimise pollutants such as nitrous oxide going into the environment

but do not reduce carbon dioxide emissions and in fact reduce fuel efficiency, so no marks were available for them.

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- Question 10** (a) **Identify any TWO** greenhouse gases released as a result of human activities **AND identify** a relevant source for **EACH**. (4)
- (b) **Outline** how emissions of greenhouse gases may contribute to 'climate change'. (4)
-

This question related to Elements 1 and 4 of the syllabus and assessed candidates' knowledge of learning outcomes 1.1: *Outline the scope and nature of environmental management* and 4.2: *Outline the main types of emissions to atmosphere and the associated hazards*.

The importance of greenhouse gases and their impact on the climate are regularly in the news and business ought to be aware of their significance. For part (a), most candidates were able to identify two greenhouse gases and most were able to identify a relevant source of the greenhouse gas. In the case of CFCs no marks were awarded for "use as a propellant in aerosols" as this use has now been banned. A few candidates mentioned sulphur dioxide and oxides of nitrogen, and also carbon monoxide, no marks were available for any of these gases. This could be due to confusion between the gases emitted by the combustion of coal and those that are greenhouse gases.

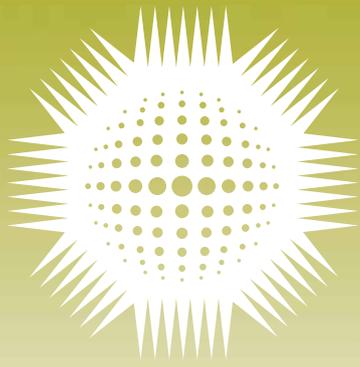
Although candidates were familiar with the greenhouse gases they were less able to give a sufficiently full outline of how they contribute to climate change for part (b) and this is an area of the syllabus that needs a better understanding. There was the usual confusion between the greenhouse effect and ozone depletion by some candidates which is another area for clarification.

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- Question 11** (a) **Explain** what is meant by the term 'pollution pathway'. (6)
- (b) **Give TWO** examples of typical pollution pathways. (2)
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This question related to Element 3 of the syllabus and assessed candidates' knowledge of learning outcome 3.4: *Explain the principles and practice of impact assessment*.

The use of the source – pathway - receptor model is fundamental to many aspects of environmental management. Part (a) asked for an **explanation** of the term 'pollution pathway' and it was expected that candidates would refer to the whole model and how the pathway fits in along with other key features relevant to the pathway. Explain requires more than outline.

For part (b), most candidates were able to give two satisfactory examples of pollution pathways. It was expected that the pathway would be shown as a link between a relevant source and receptor in order to gain the marks.



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