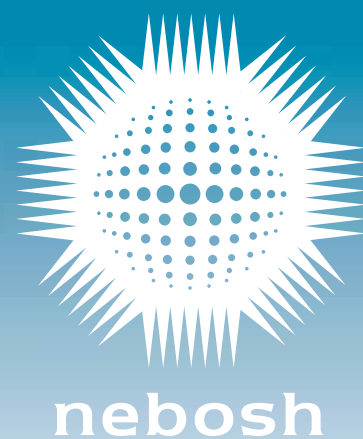


July 2015

# Examiners' Report

NEBOSH National  
Diploma in  
Occupational Health  
and Safety - Unit C



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# **Examiners' Report**

## **NEBOSH NATIONAL DIPLOMA IN OCCUPATIONAL HEALTH AND SAFETY**

### **UNIT C: WORKPLACE AND WORK EQUIPMENT**

**JULY 2015**

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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) regulatory requirements.

This report provides guidance for 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

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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, which is an essential requirement at Diploma level.

This report has been prepared to provide feedback on the standard date examination sitting in July 2015.

Feedback is presented in these key areas; examination technique, command words and learning outcomes 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 Occupational Health and Safety' which is available via the NEBOSH website. In particular, the guide sets out in detail the syllabus content for Unit C 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 Unit C 'Example question paper and Examiners' feedback on expected answers' which provides example questions and details Examiners' expectations and typical areas of underperformance.

## Unit C

### Workplace and work equipment

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#### Candidate performance

This report covers the examination sitting in July 2015.

#### Learning outcomes

##### Question 1

#### **9.4 Explain the hazards, precautions and safe working practices associated with demolition work**

Candidates were required to outline the specific demolition hazards that would be addressed by a demolition method statement (also known as a demolition plan – a specific requirement of CDM 2007 and 2015). Having studied the syllabus and remembered the general requirements would have provided an answer framework that would have yielded better than half marks.

Many candidates appeared to have learned a response to a previous, similar question on demolition and focused their answer too much around CDM 2015 requirements rather than specific demolition hazards. Few candidates were able to relate to the importance of structural surveys and the risks associated with how the building had been originally constructed, eg floor construction, pre-stressed and post-stressed concrete hazards, etc.

A common problem encountered by many candidates was an inability to link their answer to the question demand and consequently they did not address the method statement content in their outline. A number also did not gain marks as they did not restrict themselves to specific demolition hazards but gave answers associated with general construction site issues.

Course providers should stress that the syllabus is a fundamental item of revision material rather than learning the answers to past questions.

##### Question 2

#### **5.2 Explain how risks to health and safety arising from the use of work equipment are controlled**

#### **5.3 Explain safe working procedures for the maintenance, inspection and testing of work equipment according to the risks posed**

#### **6.2 Describe, with examples, the principal generic mechanical and non-mechanical hazards of general workplace machinery**

Candidates were required to apply their knowledge of the learning outcomes to identify how risks in the scenario given might have translated into the harm described. The possible failings of the appropriate guarding arrangements can only be deduced if the candidate knows the requirements for robotic work equipment. It seems that not asking for these as a direct 'rote-learned' list left many candidates unable to make the reverse connection.

Many candidates did not keep within the confines of mechanical failures when answering part (a). Human and management failings crept into many answers. A lack of technical knowledge of interlocks, mat sensing devices, etc was evident in some cases. Another common limitation was that candidates described more generally types of guarding, rather than accepting the fencing described in the question as the primary guarding method. Only a few candidates correctly identified the EMF interference possibilities of a mobile phone, focusing more on the distraction element that was outside the scope of a Unit C question.

Part (b) (i) proved difficult to all but a few candidates. Design solutions to eliminate or mitigate the failed items outlined in part (a) were required.

For part (b) (ii) very few candidates sufficiently outlined their answers and while they were able to identify requirements such as PTW/isolation/standby man, etc they often listed these. Some candidates provided more than an outline where only 1 mark was available.

A qualification at this level requires candidates to apply knowledge to unfamiliar situations but in this sitting, candidates seemed unable to do so and course providers should take note of this accordingly.

### **Question 3**

#### **3.6 Explain the purpose of, and essential requirements for, emergency evacuation procedures**

An application of the learning outcome to a specific scenario was required. Many candidates did not answer the question in context, ie with specific reference and understanding of the risks associated with refurbishment within an operational hospital. Limited answers did not mention the construction work and contractors, their actions and need to consider them in co-ordination of emergency arrangements.

A common issue was that many answers had insufficient scope to cover the aspects for which marks were available.

### **Question 4**

#### **8.4 Outline the main principles for safe working in the vicinity of high voltage systems**

Candidates needed an understanding of the legal pre-requisites to allow live electrical working followed by outlining the elements of risk control that might constitute a safe system of work in respect of live work.

While part (b) was generally well answered, there was a lack of knowledge of the requirements and wording of the Regulations in part (a). Most candidates could relate to the concept and the reasonably practicable aspect. However, very few could outline the specific terminology used in the Regulations.

It is not certain that all candidates knew the meaning of 'live working', with LOTO systems (not just on adjacent circuits) and inerting atmospheres being given as appropriate controls. Electrical questions are frequently challenging to candidates and this appears to be due to a lack of technical understanding of the science. The question in this paper was on procedure and possibly indicates that safe working in the vicinity of high voltage systems is not being adequately taught. Nowhere in the question was it mentioned that the job was on power lines and yet a significant number of candidates answered in that context and irrelevant information was given which gained no marks.

### **Question 5**

#### **11.4 Outline, the likely causes of the failure of pressure systems, and the testing and prevention strategies that can be used**

Stress corrosion cracking is the reported fourth most common failure of fired boilers, that are in turn one of the most common pressure systems found in industry.

Few candidates had knowledge regarding this form of corrosive failure and many candidates answered in the terms of regulatory requirements and spent much of their time in doing so without gaining marks. A lack of focus was another problem but the few candidates who knew the topic were rewarded with marks. In part (a) the only marks awarded regularly were for operating in excessive temperatures and for existing in a crack-promoting environment.

In part (b) pitting was the only aspect that candidates gained marks for on this particular section, while in part (c) NDT featured in answers fairly often.

It would appear that corrosion is not being taught particularly well in the context of pressure system failures. The content of the course provider syllabus teaching may require critical review more frequently than is currently undertaken, as this particular corrosive failure does not appear to feature in course providers' teaching.

## **Question 6**

### **10.2 Outline the factors associated with driving at work that increases the risk of an incident and the control measures to reduce work-related driving risks**

The majority of candidates could show sufficient understanding of road/driving risks and were able to understand what the question was requiring of them. The main limitation exhibited arose when candidates did not outline their answer and reverted to listing points. Alternatively, some responses did not have enough information; although in almost all cases a good understanding of the question was demonstrated. Some candidates wrote a long company driving policy content that did not gain marks as they were answering a previously set question, not this one. In some cases candidates overlooked the foreign travel element, thereby sacrificing the marks available for addressing this.

Candidates must read and re-read the question carefully and not assume that it is identical to one for which a prepared answer has been memorised.

## **Question 7**

### **6.7 Explain the analysis, assessment and improvement of system failures and system reliability with the use of calculations**

#### **3.3 Describe common fire detection and alarm systems and procedures**

This question required candidates to demonstrate an understanding of system reliability as applied to the practical application of fire detection and alarm design. Part (a) required the candidate to explain the fundamental approach to prevention of spurious alarms, the use of a voting system.

Most candidates showed some understanding of such a system, although a significant proportion of candidates had difficulty in expressing a definition comprehensive enough to warrant full marks.

The requirement to carry out a simple reliability calculation was not well answered, with many candidates not adopting the correct formula to attempt parts (b) and (c).

Many candidates were able to identify three types of fire alarm and outline the principles of operation and issues that can affect their reliability. However, a lack of detailed knowledge and correct terminology regarding alarm types was widespread in part (d) responses, such that a significant number of candidates did not gain more than half the marks available.

Part (e) was generally well answered with most candidates able to identify and outline a few relevant points, although 'elimination of horseplay', 'discipline for malicious acts' and 'prevention of smoking' were topics frequently raised by candidates, despite system reliability being at question.

Candidates need to understand the correct way to apply series and parallel reliability data in order to address novel, yet simple, situations.

## **Question 8**

### **7.2 Describe the main hazards and control measures associated with commonly encountered lifting equipment**

In part (a) candidates were required to describe the hazards associated with a lifting operation as given. The majority of candidates identified hazards and (unrequired) controls with respect to the crane overturning but not the full range of hazards, despite jib over stressing being the subject of part (b).

Many candidates were unable to reference issues relating to the jib and its construction and this resulted in them missing out several points in part (b). Many candidates misunderstood or did not read the question and focused on what controls would be required in part (a). When they got to part (b) this failure to read the question fully meant that several candidates gained very few marks despite showing a reasonably understanding of lifting operations. In many cases not enough was written, or too much was written on the same topic. Some candidates focused on moving the crane to site, few mentioned preventative controls following a stressing event (ie overloading, adverse conditions, etc).

Many candidates provided an answer to a question they wanted to see, not the one that was asked in this sitting.

## **Question 9**

### **1.3 Explain the assessment of risk and safe working practices associated with work in confined spaces**

Having gained greater than 50% of available marks in part (a) for identifying risk issues, most candidates were able to sufficiently outline the key controls to be adopted when working in confined spaces, hence part (b) was generally well answered.

On the debit side, frequently the confined spaces controls were often identified in part (a) and when the candidates were answering part (b) they realised their mistake and re-wrote the same answer again in part (b). This may be an indication that they had not fully read all parts of the question before starting to answer it. As such, candidates wrote in great detail about emergency plans/arrangements in part (b) resulting in them running out of ideas for part (c) and generally giving limited answers.

Despite being stated in the question stem many candidates did not gain marks with continued reference to occupational health measures.

Several candidates identified the original incident that this question was based upon and wrote up to half a page about it. Candidates must be aware that demonstration of knowledge that falls outside of what the question demands is wasted effort.

## **Question 10**

### **4.1 Outline the main physical and chemical characteristics of industrial chemical processes**

An understanding of basic chemical processes was required to be demonstrated by candidates attempting this question. Most candidates did not gain good marks due to a lack of in-depth knowledge on the subject. Most candidates understood the basic concepts of endothermic and exothermic reactions but only enough for 1 point for each answer. Rarely did candidates identify that a runaway reaction is uncontrolled.

Part (b) was often answered with human-based failings rather than the chemical and physical conditions required to cause a runaway reaction.

Part (c) was poorly answered with few candidates identifying a HAZOP as an operational control.



Controls identified were generally quite generic and not in specific context to the question. Many candidates appear not to understand what a design feature is. Frequently, general conditions were listed rather than specific operational features and often features insufficiently outlined were listed.

## **Question 11**

### **2.4 Outline the contribution of typical mechanical and systems failures to major accidents**

#### **4.4 Explain the need for emergency planning, the typical organisational arrangements needed for emergencies and relevant regulatory requirements**

Many candidates correctly identified the question scenario with the Allied Colloids case study and were able to identify the key failings that contributed to the explosion (part (a)).

However, part (b) revealed limited knowledge of the principal content of an on-site emergency plan demonstrated by the lack of many candidates to use the wording and legislative terminology from COMAH Regs.

In part (c) many marks were available that might have been thought to be intuitive. However, most candidates did not identify many of those required. Lack of detail also pervaded answers, eg “notify Environment Agency”, without explaining why. Many candidates also did not register that a Local Authority plan was required and related their answer to the company that was the source of the incident.

It was the exception when a candidate discussed in depth the requirement or the contents of both the onsite or off site plan and not many candidates knew who might have responsibilities within the plan. Marks were gained by discussing generic concepts and the answers were, in general, not of Diploma standard. It is possible that the emergency planning element of the syllabus is not being taught thoroughly with little practical application.

## **Examination technique**

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

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

It was apparent in those questions that were similar to those previously set, that the candidates' thought processes were constrained by excessive attachment to memorised answer schemes that addressed different question demands.

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

As a consequence of the first technique problem noted above there was a frequent oversight by many candidates of fundamental information or question demands contained in the question stem. If the candidate thinks they know the question demands rather than reading the question to identify them for themselves then they are misdirecting their efforts from the start.

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

This issue was most frequently demonstrated by candidates who did not impose a structure on their answers. Starting each new point on a new line would assist in preventing candidates from repeating a basic concept previously covered, as well as helping them assess whether they have covered enough information for the available marks.

## Command words

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

### Outline

Often, a candidate's response to 'outline' is lengthy, repeating aspects and topics or splitting them in the paragraph/sentence structure of an answer. Weaker answers gave lists and did not sufficiently outline in enough detail and/or did not give examples in context of the answer. In either case, it becomes difficult to assess the candidate's understanding of the question's subject.

### Explain

For this sitting the command word 'explain' was only used in Question 7. However, in general answers to 'explain' were very limited with only a short paragraph given. Although most candidates probably had the correct understanding, they were inadequate in properly expressing it. Whether this is a reflection of the candidate's language abilities, in clearly constructing a written explanation, or if it is an outcome of a limited understanding or recollection of their teaching, is unclear. It may be linked to a general societal decline in the ability to express clearly explained concepts in the written word, but which remains a skill that health and safety professionals are frequently required to demonstrate.

### Describe

Descriptions, while having the core elements of knowledge required, were often overly brief and were closer in nature to an 'outline'.

During their studies candidates need to acquire an ability to concisely but fully provide information. If they are using past questions as study aids then their use should include a fully developed answer and not just jottings summarising the main points required.

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).

## Conclusion

The feedback from Examiners highlighted that candidates taking the Unit C examinations in July 2015 needed most improvement in the areas of pressure system failures (learning outcome 11.4), industrial chemical processes (learning outcome 4.1) and emergency planning (learning outcome 4.4).

With regard to examination technique, candidates sitting this examination should concentrate on fully reading, re-reading and understanding the question set and then setting out their answers in a structured form.



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