

January 2015

Examiners' Report

NEBOSH National Diploma in Occupational Health and Safety - Unit C



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NEBOSH NATIONAL DIPLOMA IN OCCUPATIONAL HEALTH AND SAFETY

UNIT C: WORKPLACE AND WORK EQUIPMENT

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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 50,000 candidates annually and are offered by over 600 course providers, with examinations taken in over 110 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

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 January 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

Candidate performance

This report covers the examination sitting in January 2015.

Learning outcomes

Question 1

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

Candidates were required to identify the features of a motor fleet policy that would serve to provide the necessary risk control for an organisation where driving was an integral part of work activities. As such, many candidates provided good responses, particularly regarding security issues and drivers' personal factors. Many candidates were able to transpose their own experience of car use and give appropriate mark worthy control measures.

Candidates could have provided better answers if they had taken a hierarchical approach referring to technical, procedural and behavioural control measures that could reduce the risks to work-related driving risks.

A number of candidates, included minimisation of use of vehicles and use of public transport, these did not attract marks due to them not being practical as part of any essential car-user or motor fleet safety arrangements.

Although this learning outcome appears to be well understood, candidates who did not do well usually did so from failure to structure their answer, repeating their answers and losing valuable time and marks.

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

6.3 Describe protective devices found on general workplace machinery

Candidates were expected to demonstrate an understanding of when the operation of safety interlock switches should be inspected and other methods of maintaining the effectiveness of safety interlocks.

Most candidates gained good marks on determining the inspection requirements of safety interlock systems. However, candidates struggled with methods for maintaining safety interlocks.

Candidates mentioned completing more testing, risk assessment and inspection of the interlocks. However, although these would assist in detecting ineffectiveness they do not in themselves maintain effectiveness.

A lack of ability to draw on information from the breadth of the unit syllabus meant that candidates did not address the demands of the full learning outcome and were unable to exhibit the level of synthesis expected for this qualification. Course providers should address the wider application of unit knowledge in their teaching sessions.

Question 3

1.4 Outline the main issues associated with maintaining structural safety of workplaces

Most candidates had some understanding of the principles of maintaining structural stability and the question was answered moderately well. However, some candidates wasted time by going in to detail about various conditions that could have affected the structure over the past hundred years and not answering the scenario of what work was being completed. In most cases, those candidates who did not gain good marks confined their answer to the old structure and did not apply their answer to the scenario. Although many candidates clearly understood what was asked a lack of depth of answers prevented marks being awarded. It appeared that candidates had knowledge of a similar question that focused on pre-existing causes of collapse from gradual decay, rather than those caused by refurbishment. Some candidates focused on plant collision with the structure and by not focusing on other structural safety or work places missed the opportunity of gaining marks.

Candidates must ensure that they clearly identify what the question demands and answer accordingly.

Question 4

4.2 Outline the main principles of the safe storage, handling and transport of dangerous substances

4.3 Outline the main principles of the design and use of electrical systems and equipment in adverse or hazardous environment

Candidates generally knew that this question referenced an actual incident and could relate their answer to this. For a major spillage of flammable substances it is important that candidates understand that certain prevention controls were demonstrated to be inadequate as a result of Buncefield. Therefore a more rigorous approach to the selection of prevention and mitigation measures is required. Candidates were expected to differentiate both 'prevention' and 'mitigation'. However, some candidates did not gain marks by mixing them together in their responses. These terms are fundamental to the language of safety and it is important that candidates understand the relative importance of these two strands of risk control.

It was apparent that many candidates had a brief knowledge and understanding of this part of the syllabus but did not have the sufficient breadth and depth to gain good marks.

Question 5

2.1 Outline the properties of flammable and explosive materials and the mechanisms by which they ignite

Some candidates demonstrated a clear understanding of vapour cloud explosions, both confined and unconfined, and on the whole the question was answered moderately well. Candidates stated in their answers the control measures to prevent a vapour cloud explosion. However, this was poor examination technique as the learning outcome did not require control measures and candidates wasted valuable marks and time. Some responses discussed boiling liquid expanding vapour explosions (BLEVEs) and dust explosions, these were not relevant. Candidates were expected to mention actual incidents of both vapour cloud explosions. However, some candidates illustrated the incorrect examples of incidents and did not gain marks.

Question 6

8.2 Outline the dangers of electricity

8.5 Outline the main hazards, risks and controls associated with the use of portable electrical equipment

Within the syllabus content of 8.2, 'electric arcs' are specifically listed. Candidates were expected to identify causes of undesirable electric arcs and responses were limited to electrical faults and contact with overhead cables. Other possible causes were not included in candidates' responses that would have shown adequate breadth of knowledge in this element content.

Candidates were also expected to show an understanding of risks from undesirable arcs. Candidates had a good understanding of the dangers of electricity and the risks and controls for portable appliances. However, candidates' answers were limited and candidates were not prepared to address the specifics for portable generators and arc welders. As a result, mistaken answers covering MCBs, RCDs, centre-tapped transformers, low voltage and PAT testing were common. It is important that candidates have an appropriate breadth of knowledge across the full syllabus.

Question 7

11.1 Outline the principles of operation of liquefied gas storage; refrigeration systems; and heating systems

11.3 Outline the key features and safety requirements for process pressure systems

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

Candidates were expected to show their knowledge of steam heating, the common failures of such systems and the required associated safety devices. In addition, candidates were required to identify non-destructive testing (NDT) techniques including being specific to what defect each technique can identify. Course providers and candidates must appreciate that knowledge is required to be viewed holistically within any unit and avoid compartmentalisation.

The heating element required candidates to have knowledge of the basic principles of operation including the effects of overtemperature of fired tubed boilers. In addition, candidates were required to identify the safety device failures with the associated causal factors in relation to various types of boilers.

Giving adequate breadth in responses was essential particularly when identifying both the types of NDT for heating systems and the defect being examined/inspected.

The assessed learning outcomes were to challenge candidates' ability to demonstrate knowledge and understanding across element 11 of the syllabus. Candidates must obtain the adequate understanding of all areas of the syllabus to be able to give appropriate depth and breadth in their responses.

Question 8

9.3 Explain the hazards associated with working at heights from fixed work or temporary platforms and the necessary precautions and safe working practices

Candidates were required to demonstrate sufficient knowledge and understanding of scaffolding design and the reasons for possible scaffold failure sufficient for this level of qualification. Many candidates were able to do this and as a result gained good marks.

Some candidates lost time by detailing parts of scaffolding, such as toe boards and handrails, these were not required, and not focusing on the actual stability issues of a scaffold. The lack of breadth in responses resulted in some candidates including issues such as terrorism and aircraft affecting the stability of the scaffold.

Most candidates demonstrated good knowledge of scaffold design and were able to describe the main principles of scaffold design and actions that are required to be taken during the erection of scaffolds.

Overall, candidates provided good responses and it is apparent that this element is being taught well by course providers.

Question 9

7.1 Describe the main hazards and control measures associated with commonly encountered mobile work equipment

A very popular question with the majority of candidates being able to discuss the various situations when and why forklift truck (FLT) operators should undertake refresher training. Candidates gained good marks on this part of the question.

In addition, candidates were expected to outline the different stages of such training. Candidates could approach this area by structuring their responses around basic, specific and familiarisation stages of training and give specifics in appropriate depth, relevant to each type of training. These are covered within the content section of 7.1 of the course syllabus.

When discussing the causes of instability of FLT's candidates should give sufficient depth of responses. At this level of qualification responses such as 'driving on a slope' would not warrant a mark to be awarded. Candidates must give more of an explanation of each type of possible cause of instability.

Question 10

6.1 Describe the principles of safety integration and the considerations required in a general workplace machinery risk assessment

The assessed learning outcome of 6.1 with regard to work equipment (workplace machinery) requires candidates to give appropriate depth of knowledge on CE marking. Candidates should focus on explaining the relevance specifically to CE marking of machinery. In addition, candidates are also required to have appropriate understanding on what assessments are required on machinery prior to affixing CE to an item of machinery. Candidates must have knowledge on types of Annex IV and Non-Annex IV equipment to and what each assessment comprises to be able to show appropriate understanding of this element. Candidates are expected to demonstrate an understanding of what a declaration of conformity is and also what should be included within the content.

Question 11

3.5 Outline the factors to be considered in the provision and maintenance of means of escape

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

This question required candidates to be able to demonstrate understanding of issues that could contribute to the delay in an evacuation. To gain maximum marks candidates are advised to structure their responses to prevent repeating answers and writing paragraphs of text that are not relevant.

Issues that could be considered include considering issues with alarm systems, human factors, current procedures etc and giving appropriate responses within each one. Candidates are also required to understand the advantages/disadvantages of completing fire drills.

A good examination technique is to structure the responses and to consider both the command word and the number of marks available for each question/part of question.

Examination technique

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

Candidates misread/misinterpreted the question

Questions are set and relate directly to the learning outcomes contained within the syllabus guide. The syllabus guide requires that candidates will be sufficiently prepared to provide the relevant depth of answers across a broad range of topic 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 topic to which the question relates.

Examiners reported that candidates appeared to have misread or misinterpreted the question and suggested that while many candidates began their answer satisfactorily and perhaps gained one or two marks, they then lost sight of the question and included irrelevant information. Although further points included in the answer can relate to the general topic area, these points are not focused on the specific learning outcome and marks cannot be awarded. Where candidates appeared to misread or misinterpret several questions this situation is more likely due to candidates preparing for the examination with a number of stock answers obtained through rote-learning, that again can provide answers that are loosely associated with the topic matter but do not provide answers to the question. Such an approach is clearly evident to an Examiner and demonstrates little understanding of the topic 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. Underlining or highlighting key words can assist in keeping focused 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 repeated the same point but in different ways

Examiners reported that candidates repeated the same points throughout their responses. A good examination technique is to work from a mind map (suggested in previous section) and leave a line between points/responses given. This allows a candidate to quickly see how many points/responses they have given and that they are relevant to both the command word and topic area and that they have responded to the appropriate marks being awarded for that question. This could reduce the chances of repeating responses and wasting examination time.

Candidates' handwriting was illegible

If an Examiner cannot read a candidate's answer it logically follows that they cannot award marks. It has been necessary on occasion to take an oblique view of a script to decipher excessively italicised handwriting. During the course of study course providers should set exercises requiring a written, not typed, response. If there are concerns about a candidate's legibility, advice such as developing a printing approach should be offered. Candidates with poorly legible handwriting need to understand this constraint early in their course of studies in order for them to minimise the effect this may have.

Command words

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

Outline

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

Several candidates did 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*'.

Therefore if a question asks for an outline of the precautions when maintaining an item of work equipment, reference to isolation, safe access and personal protective equipment would not be sufficient on their own to gain the marks available. A suitable outline would include the meaning of isolation, how to achieve safe access and the types of protective clothing required.

Explain

The command word 'explain' will usually be used in conjunction with 'why' or 'how'. Such as '**explain** how an interlocked guard operates'. Some candidates do 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.

However, the majority of candidates did tend to answer such questions satisfactorily in this period, although some candidates did have difficulty in explaining in a logical sequence and many seemed to repeat the same point.

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. However, candidates either saw the command word 'describe' as an opportunity to fill out an answer with irrelevant detail, or conversely some candidates did not recognise the difference between an 'outline' and 'describe' question and provided insufficient detail in their answer.

In either case, the marks that could be awarded were limited. If a person was asked to describe the chair they were sitting on, they would have little difficulty in doing so and would not give general unconnected information about chairs in general, fill a page with everything they know about chairs or explain why they were sitting on the chair. Candidates should consider the general use of the command word when providing examination answers.

Give

'Give' is usually in a question together with a further requirement, such as '**give** the meaning of' or '**give** an example in **EACH** case'. Candidates tend to answer such questions satisfactorily, especially where a question might ask to 'identify' something and then 'give' an example. The candidate who can answer the first part, invariably has little difficulty in giving the example.

Identify

The response to this command word was generally competently executed – however many candidates went on to needlessly expand and wasted time.

When providing an answer to a question qualified by the command word 'identify', the name or title of an item is required. Such as '**identify** the forms of a hazardous substance', or '**identify** the features to be inspected on an electrical appliance'. In most cases, one or two words will be sufficient and further detail will not be required to gain the marks.

Candidates should feel confident that the quantity of words does not equal quantity of marks where the command word is 'identify'.

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.

Conclusion

The feedback from Examiners highlighted that candidates taking the Unit C examinations in January 2015 needed most improvement in the areas of all of Element 11 and the principles of safety integration and the considerations required in a general workplace machinery risk assessment (learning outcome 6.1).

With regard to examination technique, candidates should take care to read and re-read the question carefully and undertake planning of examination answers to avoid repetition of the same point.

Course providers and candidates need to be confident that all relevant syllabus content is covered to the depth indicated by the command words in the individual learning outcomes. In addition, there is a need for candidates to be able to use their knowledge and apply it to new situations (new questions), that they may not have encountered before. Relying on previous questions that have been practiced as part of the course study is not, alone, a reliable approach to examination success. Neither does this approach prepare individuals for their role as health and safety practitioners.

With regard to examination technique, candidates sitting this examination should improve their ability to comprehend question demands and achieve a better personal style of answer layout/structure.



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