January 2015

Examiners' Report

NEBOSH International Diploma in Occupational Health and Safety (Unit B)

Examiners' Report

NEBOSH INTERNATIONAL DIPLOMA IN OCCUPATIONAL HEALTH AND SAFETY

UNIT IB: INTERNATIONAL CONTROL OF HAZARDOUS AGENTS IN THE WORKPLACE

JANUARY 2015

CONTENTS

tel: 0116 263 4700 fax: 0116 282 4000 email: info@nebosh.org.uk website: www.nebosh.org.uk

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.

Any enquiries about this report publication should be addressed to:

NEBOSH
Dominus Way
Meridian Business Park
Leicester
LE19 1QW

tel: 0116 263 4700
fax: 0116 282 4000
email: info@nebosh.org.uk

General comments

Many candidates are well prepared for this unit assessment and provide comprehensive and relevant answers in response to the demands of the questions. 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 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 International 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 IB 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 IB 'Example question paper and Examiners' feedback on expected answers' which provides example questions and details Examiners' expectations and typical areas of underperformance.

Unit IB
International control of hazardous agents in the workplace

Candidate performance

This report covers the examination sitting in January 2015.

Learning outcomes

Question 1

10.1 Explain the need for, and factors involved in, the provision and maintenance of thermal comfort in the working environment

This part of the syllabus is concerned with the influence of thermal comfort and stress on worker safety and health. This also covers how these are measured and assessed through the use of indicators (like PPD) and indices (like WBGT).

Candidates generally appreciated the impacts of thermal discomfort but were frequently unaware of the meaning of thermal comfort (except in very general terms) or how indices are practically used to assess thermal stress.

Course providers should ensure that this area of the syllabus is taught more thoroughly, especially the use of thermal indicators and indices used in practice.

Question 2

1.4 Explain the health effects of chemicals used in the workplace

2.2 Explain elimination of risk or control measures for chemicals which are hazardous to health

A large part of the syllabus is concerned with the health effects of chemicals and their control. A wide range of substances are mentioned in the syllabus, including lead, about which candidates appeared to know only a little. Candidates all too often adopt a generic health effects approach to these types of questions. However, while some health effects are common to many hazardous substances, substances like lead produce more specific effects.

Candidates also tend to use a generic approach to control measures. While applying a hierarchy of control approach to any chemical control question is a good initial plan, candidates need to remember to make their answers fit the context too. That means ensuring the answer is specific and not generic.

Question 3

6.6 Explain the effects of vibration on the individual

The syllabus divides vibration into two types: HAVS - hand-arm vibration (mainly relating to hand operated power tools) and WBV - whole body vibration (mainly relating to vibrating surfaces upon which people stand or sit). This question was focusing on the latter and the practical measures that could be taken to control it. While some candidates will always confuse the two types of vibration, most candidates tackled this area well.

Candidates were able to correctly propose a range of controls that would be appropriate to reducing the risk of health effects from WBV experienced by drivers. For example, the selection of appropriate vehicles for the terrain and the maintenance of roadways.

This part of the syllabus appears to be well taught by course providers.

Question 4

9.2 Explain the assessment and control of risks from repetitive activities, manual handling and poor posture

Ergonomics covers a wide range of issues. This question focused on minimising ill-health in the use of display screen equipment - such as desktop computers and laptops. Candidates had no difficulty with this question. They were easily able to outline a range of measures largely to do with the workstation setup and adjustability, eg separate keyboard/mouse (where possible), appropriately sized screen (for the type of work), adjustable chair height (but a chair is not always needed or desirable). This is not surprising as computers are commonly found in just about every workplace throughout the world.

Question 5

8.3 Explain the scope, effects and causes of work-related violence/aggression

8.4 Explain the identification and control of work-related violence/aggression with reference to relevant standards

This question expected candidates to know the meaning of the term 'work-related violence' and be familiar with measures used to recognise and control it in common situations, such as home visits by a nurse. Candidates had no real difficulties with this topic.

Candidates were able to outline that the term not only included physical violence/harm but also threats and that these could come from other workers as well as the public.

Candidates were also able to outline a wide range of practical measures relevant to the scenario, such as familiarisation with patient notes prior to visiting, and carrying communication devices.

This area appears to be well taught by course providers and well understood by candidates.

Question 6

1.5 Explain the principles of epidemiology and the principles of deriving and applying toxicological data to the identification of work-related ill-health

This question probed candidates' knowledge of some commonly used toxicologically terms as well as their ability to justify the use of toxicological tests, such as animal testing. Candidates are not expected to be toxicologists but a basic knowledge of the origins of data used to classify chemicals can help understanding of what the hazard classifications actually mean in practice. Most candidates performed well here.

Candidates were able to outline the meaning of some commonly used terms, such as LD_{50}, though they appeared less familiar with LC_{50}. Candidates were able to outline issues related to the use of animal testing, though more was known about their limitations (ethical considerations, response variation between species) than their advantages (closeness of animal metabolism to humans, no risk to humans etc). Candidates would therefore be advised to review their knowledge of the latter.

Question 7

11.3 Outline the management of occupational health (including the practical and legal aspects)

This area of the syllabus is very broad, reflecting the wide ranging nature of occupational health service provision.

Most candidates found this area gave them a good deal of scope to gain good marks. Candidates were easily able to outline roles and functions such as medical examinations, first aid provision and advising management on redeployment of staff.

This area is well understood by candidates and well taught by course providers.

Question 8

2.1 Outline the factors to consider when assessing risks from chemicals which are hazardous to health

4.1 Explain occupational exposure limits for airborne harmful substances, the basis upon which they are established, and their application to the workplace

The question was about assessing exposure of workers to hazardous dusts and the measures needed to control it. Candidates were generally able to outline the meaning of 'occupational exposure limits' (though some always confuse this with biological limits, even though the question context was clearly to do with airborne dusts).

Risk assessment for hazardous substance exposure is straightforward, provided you consider the specific risk factors (like health effects, exposure duration and any applicable exposure limits). Course providers should spend more time helping candidates understand the commonly used term 'risk factors', as candidates appear to be confused sometimes and instead focus on either consequences or controls. 'Risk factors' simply means those issues that can significantly influence the level of risk (either through affecting the likelihood or severity).

Candidates had no real difficulty outlining control measures, such as LEV, dust suppression and RPE.

Question 9

3.2 Explain the various types of personal protective equipment (PPE) available for use with hazardous chemicals, their effectiveness, and the factors to consider in their selection

This topic area is concerned with PPE such as RPE, skin protection (chemically-resistant gloves, overalls, shoes/boots) and eye protection (chemically-resistant goggles, face shields). Candidates are expected to know the principals involved in selection of appropriate PPE, and how it should be properly used in the workplace.

This was a popular question and most candidates performed well in this area. Candidates were easily able to outline a range of factors to consider in selecting skin and eye protection against hazardous chemicals, for example chemical breakthrough time, durability, comfort. One point to note is that some of these factors will only apply to a specific type of PPE and this should be made clear in the answer provided by the candidate, eg dexterity requirements apply to gloves. Some factors (like meeting quality standards) will apply to all.

Question 10

5.2 Explain the assessment and control of risk from exposure to biological agents at work

Biological agents has never been a popular choice for candidates (course providers please take note). A significant section of this topic is zoonoses, such as cryptosporidiosis and leptospirosis. These are occupationally relevant to animal farming.

Although few candidates attempted this question, those who did usually performed reasonably well. They were able to outline the meaning of the term 'zoonose' (animal diseases/infections which can be passed to humans) and identify circumstances where exposure was likely in typical occupational setting (eg hand-to-mouth transmission after direct contact with animals).

However, candidates should try to make their answers relevant to the scenario. Control measures suggested were sometimes unrealistic. Trying to apply high-grade laboratory control techniques on a working farm is unlikely to be achievable.

Question 11

7.3 Explain the effects of exposure to ionising radiation, its measurement and control

Ionising radiation, how it is measured and controlled, is a core area of the syllabus. Although ionising radiation is somewhat of a specialist area, candidates are expected to have a basic knowledge of health effects of exposure to ionising radiation and to be familiar with some of the control principles. Some candidates do very well on these questions, demonstrating a good understanding of the basic physics.

However, many candidates continue to be confused between ionising and non-ionising forms. Within ionising radiation, candidates are also confused between particulate and non-particulate (wave) varieties and also different types of ionising radiation may require a different approach. For example, alpha radiation sources, for the most part, can effectively be treated as surface chemical contaminants because of their very limited ill-health potential if kept outside the body. Adopting a generic radiation control, or a 'hierarchy of control' approach with such sources therefore is inappropriate.

Course providers are advised to cover this topic more thoroughly to ensure candidates understand the basics, especially the differences between ionising and non-ionising, and particulate and wave.

Examination technique

The following examination techniques were identified as some of the main areas of improvement for candidates in this sitting:

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

Examiners reported a high incidence of candidates writing down answers they have memorised from previous Examiners' reports. These answers often relate to a similar, but different question, to which the memorised answer is not wholly applicable. For example, it may require a different aspect of the topic or relate to a different scenario.

Candidates are expected to apply their knowledge and understanding to the actual question given, not the question they think they see. This is why it is extremely important that candidates understand and are able to apply their knowledge, and not just memorise. Course providers should help candidates apply their knowledge to a range of different scenarios to aid understanding of the topic.

Candidates' hand-writing was illegible

Examiners reported that candidates' hand-writing was sometimes very difficult to read. Examiners do not expect perfect hand-writing under examination conditions, but neither do they expect to have to struggle too hard to read it.

When practicing examination technique, candidates should hand-write their answers and get feedback from their course providers on legibility (as well as how they performed).

Candidates unnecessarily wrote the question down

There are 15 minutes to answer a 10-mark question in Section A and 30 minutes available to answer a 20-mark question in Section B of the question paper. This time will be required for reading and understanding the question, developing an answer plan mentally or in brief note form on the answer booklet and finally committing the answer to the answer booklet. The efficient use of time is essential in order to answer the 9 questions within the 3 hours available. The majority of Examiners reported that candidates felt it necessary to write the question out in full, before providing the associated answer, and this marginally limits the time available. Course providers should remind candidates that it is not necessary to include a question with their answer.

Command words

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

Explain

This proved the most difficult level for candidates, specifically, struggling with the difference between 'explain' and 'outline'.

When a question specifies 'explain' the candidate is required to provide an understanding or make clear an idea or relationship. For example '**explain** how the wet bulb globe temperature (WBGT) equation is used to assess heat stress'. If a candidate responded with calculate WBGT and compare with standards 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 with stating the WBGT equation (outside vs inside), the need to compare the calculated result with the international standard values, the need to take account of factors such as metabolic rate (as tabulated in the standard), the assumptions of the typical fit, healthy worker and normal level of clothing etc, this would merit the awarding of marks.

Outline

Candidates had little difficulty with this command word, except in sometimes struggling with the difference between 'explain' and 'outline', as noted above.

Exhaustive descriptions were not required for 'outline' but limited answers like single words or listed answers did not satisfy the command word requirements.

If asked to '**outline** how health risks from exposure to lead should be managed…' in a given scenario, an answer such as medical tests, PPE, RPE would be insufficient as this represents a listed answer. However, surveillance tests for lead in blood/urine, the use of PPE such as overalls, the use of RPE such as respirator with appropriate particulate/fume filters would gain marks.

Give

'Give' is normally used in conjunction with a further requirement, such as '**give** the meaning of' or '**give** an example in **EACH** case'. Candidates had no real difficulty with this.

Identify

Candidates had no difficulty with this command word.

When providing a response to 'identify' the mental 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. For example, if the question was '**identify** possible health effects of exposure to lead…..' suitable responses would include developmental effects in unborn babies, anaemia, nausea/vomiting in order to be awarded a mark.

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 IB examinations in January 2015 needed most improvement in the areas of thermal indices (learning outcome 10.1), hazardous substance risk factors (learning outcome 2.2), zoonoses (learning outcome 5.2) and ionising radiation (learning outcome 7.3).

With regard to examination technique, candidates sitting this examination should avoid wasting time writing the question out. They should also not simply write down memorised answers to a previous, similar question which they think is there. In some cases, handwriting was exceptionally difficult to decipher. Although Examiners will try very hard to read hand writing, it will be appreciated if candidates attempt to write legibly especially as it makes it much easier to award marks when the point can be clearly seen.

The National Examination
Board in Occupational
Safety and Health

Dominus Way
Meridian Business Park
Leicester LE19 1QW

telephone +44 (0)116 2634700
fax +44 (0)116 2824000
email info@nebosh.org.uk
www.nebosh.org.uk