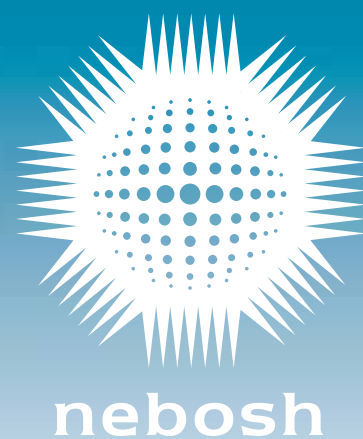


January 2017

# Examiners' Report

## NEBOSH National Diploma in Occupational Health and Safety - Unit B



---

# **Examiners' Report**

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

### **UNIT B: HAZARDOUS AGENTS IN THE WORKPLACE**

**JANUARY 2017**

---



## **CONTENTS**

Introduction	2
General comments	3
Comments on individual questions	4
Examination technique	16
Command words	20

# 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.

© NEBOSH 2017

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](mailto: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 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 2017. This report covers both 2010 and 2015 specifications.

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 Occupational Health and Safety' which is available via the NEBOSH website. In particular, the guide sets out in detail the syllabus content for Unit B 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 B 'Example question paper and Examiners' feedback on expected answers' which provides example questions and details Examiners' expectations and typical areas of underperformance.

## Unit B

# Hazardous agents in the workplace

- Question 1** *In a particular department of a large manufacturing organisation managers are concerned that a fall in productivity in the last 12 months is linked to an increase in sickness absence among the workforce. The management team want the occupational health department to assist them in reducing sickness absence and increasing productivity.*
- (a) **Identify** specific information the occupational health department could review to determine possible reasons for the increase in sickness absence. (4)
- (b) **Outline** how the occupational health department can:
- (i) help to prevent or reduce instances of sickness absence from work in the future; (3)
- (ii) reduce the duration of sickness absence from work. (3)

This question assessed candidates' knowledge and understanding of learning outcome 11.3: Outline the management of occupational health (including the practical and legal aspects); equivalent to 1.3 in the 2015 specification.

In part (a) candidates were able to identify some of the obvious sources of information the occupational health department could review. Accident reports and return to work interviews were commonly mentioned. Many candidates overlooked the fact that occupational health departments often provide treatment for some workplace injuries. Candidates did not mention that records relating to the attendance at the occupational health for treatment could provide another source of information to review. Fit notes were also not commonly mentioned. Fit notes would always give information on the health conditions a person has been affected by during their recent absence. Therefore, this information could be reviewed when determining the possible reasons for an increase in sickness absence.

Part (b) was divided into two parts with (b) (i) concentrating on instances of sickness absence and part (b) (ii) addressing duration of the absence. Few candidates fully distinguished these when answering the question and providing relevant information in the wrong part of the question was not mark-worthy. Training employees about risks and controls could help reduce instances of sickness absence, whereas providing treatment for minor injuries is something the occupational health department could do to minimise the time for which an employee is absent from work. If the occupational health department can offer this treatment it may avoid an initial absence to attend a GP or a minor injuries centre for treatment. If follow up treatments can also be offered, for example re-dressing a wound, then again the time of the absence from work can be minimised.

Few candidates thought that the occupational health department could be involved in designing an attendance incentive scheme as a way of reducing instances of sickness absence.

This question was targeted at *particular occasions* or *situations* where the occupational health department can be of assistance to the organisation. Only those candidates who were able to use their overall knowledge of occupational health functions and apply it to these particular situations, were able to gain higher marks.

The average mark for this question was around half marks and the overall performance was reasonable.

---

**Question 2**

*A bus company operates a fleet of buses to provide transport for passengers in a busy city. The bus driver is the only bus company employee on each bus. Bus drivers are sometimes subject to violence.*

- (a) **Outline** why these bus drivers may be at an increased risk of violence. (5)
- (b) **Outline** practical control measures to help reduce the risk of violence to these bus drivers. (5)
- 

This question assessed candidates' knowledge and understanding of learning outcomes 8.3: Explain the scope, effects and causes of work-related violence/aggression; and 8.4: Explain the identification and control of work-related violence/aggression with reference to legal duties.

Most candidates performed very well on this question and the average mark achieved was well above half marks. A significant number of candidates were close to gaining full marks.

In part (a) candidates clearly understood what can increase the risk of violence at work and were able to apply that well to this scenario. Only a few candidates specifically mentioned overcrowding on the bus possibly leading to violence from some passengers.

There was a good range of practical measures to reduce the risks of violence included in answers to part (b); although few candidates mentioned driver exit doors that would allow the driver to retreat in the event of a violent incident. The provision of good lighting, both inside the bus and at bus stops, was also missed by many candidates.

---

**Question 3**

The hazardous substance called machine-made mineral fibre (MMMF) has workplace exposure limits (WELs). Unusually, there are two WELs. The WELs are expressed in fibre/ml and also as mg/m<sup>3</sup> and are as follows:

2 fibre/ml 8-hour time-weighted average (TWA);  
5 mg/m<sup>3</sup> 8-hour TWA.

Two personal monitoring results obtained using two different measuring techniques for an operative working with MMMF, are provided below:

Sample Number	Sample Time (hours)	Pump Flow Rate (litre/minute)	Number of Fibres on filter	Weight of MMMF on filter (mg)
1	6 hours	0.5	5625	-
2	4 hours	2.0	-	2

**Note:**

1000ml = 1 litre

1000 litres = 1m<sup>3</sup>

- (a) **Calculate** the average concentration of MMMF to which the operative is exposed for **EACH** of the **TWO** samples shown. (6)

You **must** show your working.

- (b) **Comment** on the significance of the operative's exposure in terms of future action required to comply with the Control of Substances Hazardous to Health (COSHH) Regulations 2002. (4)

Assume the exposure in the time monitored is representative of exposure during the full 8-hour shift.

---

This question assessed candidates' knowledge and understanding of learning outcome 4.2: Outline the strategies, methods, and equipment for the sampling and measurement of airborne contaminants (Outline the methods for sampling of airborne contaminants in the 2015 specification). Particularly the syllabus content within 4.2 that requires candidates to calculate exposures to hazardous substances from gathered data including sample mass, pump flow rate and flow time.

It was clear that some candidates had 'learned' a typical approach to calculations and tried to apply it here. However, that did not work and instead it required candidates to understand how to manipulate the key parameters of measuring exposure. These parameters are an 'amount of sample' collected and a 'volume of air' sampled. Both calculations in part (a) used this approach requiring the former to be divided by the later. Conversion factors from litres to m<sup>3</sup> were given but candidates did not often know how to use these, suggesting a more fundamental lack of mathematical knowledge. It should be noted that in order to study this level of qualification it is assumed candidates are able to carry out simple mathematical procedures such as multiplication and division. This can be done in the examination with the aid of calculator.

Course providers should assist candidates to understand the concepts behind exposure monitoring and calculations and not concentrate solely of on how to use the equation on page 41 of EH40. In addition, information that explains some of the detail in table 1 of EH40 should be explained to aid a candidate's overall understanding.

From those candidates who did attempt this question, a few who understood the concepts made good progress on the calculations and were able to gain some marks even if there were minor slips with volume conversion or arithmetic. A very small number of candidates provided full and complete answers to part (a).

Candidates who answered part (b) often gained marks for indicating the current controls were adequate. Only those candidates who understood the calculations in part (a) were able to conclude that any future monitoring could be based only on the gravimetric measurement, which gave a result of exposure that was close to the WEL. Since the fibre concentration exposure was very much lower than the WEL, there was no need to monitor this in the future.

The overall performance on this question was limited and the average mark was low, as so many candidates made no attempt at an answer.

---

<b>Question 4</b>	(a)	<b>Summarise</b> the duties of an employer under the Control of Noise at Work Regulations 2005.	<b>(4)</b>
	(b)	<b>Give</b> the meaning of the following terms used in noise control:	
	(i)	transmission;	<b>(1)</b>
	(ii)	damping.	<b>(1)</b>
	(c)	<b>Outline</b> the legal requirements for a hearing protection zone within a workplace.	<b>(4)</b>

---

This question assessed candidates' knowledge and understanding of learning outcome 6.4: Explain the principles of controlling noise and noise exposure.

In part (a) candidates had difficulty in being concise when summarising the legal duties of the employer. Candidates were not able to give the holistic approach that the Control at Noise at Work Regulations (CNWR) set out, namely: assess the risks to employees, take action to reduce the noise exposure, provide hearing protection where it is not possible to control exposure by other means, make sure the legal limits for noise exposure are not exceeded, provide employees with information, instruction and training and finally, to provide health surveillance where there is a risk to health.

Instead, candidates often only focused on the legal limits for noise exposure and wrote at length about the various numerical values that trigger the upper and lower exposure actions values. Terminology for these numerical values was sometimes inaccurate. Many candidates thought that health surveillance for noise (audiometry) is always required by law. Candidates should look carefully at the wording in Regulation 9 of the CNWR as well as Part 6 and appendix 5 of the HSE document L108.

The syllabus at learning outcome 6.4 lists a number of terms with which candidates should be familiar. Two of these terms, '*transmission*' and '*damping*', were included in part (b) of this question. Other terms in this part of the syllabus include reflection, absorption, sound reduction indices, absorption coefficients isolation, diffusion, barriers, acoustic enclosures, distance and active noise cancellation. Candidates need to be familiar with all of these terms in the context of noise at work. Many candidates had difficulty in giving a concise meaning of the two terms in this question, in particular '*transmission*'.

The creation and management of a hearing protection zone (HPZ) is covered in Regulation 7 of the CNWR and detail is given in the guidance for Regulation 7 in HSE document L108. Candidates were often unclear about what situations result in the creation of a HPZ. It is an area of the workplace where the personal exposure is above the upper exposure action value or the exposure limit value for peak noise.



Many candidates missed out on marks available in part (c) for the legal requirements of HPZs. Marks could be gained for outlining the type of signage required for HPZs (blue roundel with hearing protection pictogram), or that this signage must comply with the requirements of the Health and Safety (Safety Signs and Signals) Regulations.

The overall performance on this question was limited and indicated that candidates had sometimes got lost in the detail of controlling of noise at work and could not address the more fundamental knowledge of the CNWR that this question was assessing. The average mark for this question was below half marks.

---

<b>Question 5</b>	<i>Employees at a waste-water treatment plant are at risk from contracting cryptosporidiosis.</i>	
(a)	<b>Explain</b> how these employees might contract cryptosporidiosis.	<b>(4)</b>
(b)	<b>Identify</b> symptoms associated with cryptosporidiosis.	<b>(2)</b>
(c)	<b>Outline</b> specific control measures that these employees should use to help reduce the risk of contracting cryptosporidiosis.	<b>(4)</b>

---

This question assessed candidates' knowledge and understanding of learning outcomes 5.1: Explain the types and properties of biological agents found at work; and 5.2: Explain the assessment and control of risk from exposure to biological agents at work (Explain the assessment and control of risk from deliberate and non-deliberate exposure to biological agents at work, in the 2015 specification).

Answers to this question were variable, but most candidates were able to gain some marks in each of the three sections of the question. A common oversight in part (a) was not explaining that cryptosporidiosis is caused by a protozoan parasite (*Cryptosporidium parvum*). Instead, many candidates stated that it is caused by a bacteria or virus, which is not correct. Recognising that it is transmitted by the faecal-oral route (hand to mouth) was widely known.

In part (b) some candidates identified numerous symptoms, some of which were correct.

In part (c) some candidates did not gain marks as they were too vague when outlining control measures. Simply saying "maintain good hygiene" was not sufficient. Specifics such as hand washing using warm water and soap was needed to gain marks. Few candidates appreciated that for this biological agent it is necessary to use a hydrogen peroxide disinfectant, as chlorine-based ones are not effective.

The average mark for this question was close to half marks.

---

**Question 6** *Dilution ventilation can be used to control certain types of hazardous substances generated in a workplace.*

(a) **Outline** circumstances when dilution ventilation may be appropriate as a control measure. (3)

(b) **Explain** how an effective dilution ventilation system is designed and operates to reduce exposure to a hazardous substance. (4)

(c) *The following specification applies in an open-plan workshop:*

<i>Workshop dimensions (metres):</i>	<i>10m x 10m x 3m</i>
<i>Volume of air throughput each hour:</i>	<i>3000m<sup>3</sup></i>
<i>Required air changes per hour:</i>	<i>10 to 15</i>

**Calculate** the actual number of air changes per hour **AND** **comment** on the suitability of the specified dilution ventilation system. (3)

---

This question assessed candidates' knowledge and understanding of learning outcome 3.1: Explain local exhaust ventilation and procedures to ensure effective ventilation, in the 2010 specification; (equivalent to 3.3: Explain the uses and limitations of dilution ventilation and the purpose and operation of local exhaust ventilation, including assessing and maintaining effectiveness, in 2015 specification).

There was a common theme running through many answers to this question with confusion between dilution ventilation and local exhaust ventilation. Both are included in the diploma syllabus within learning outcome 3.1 (or 3.3). Course providers should confirm that candidates understand the difference between these types of ventilation and in what situations each is used as a control measure. Helpful information is available in some of the control guidance sheets on the COSHH essentials (HSE) website.

In part (a) few candidates gave a good outline and many candidates were not able to include a range of circumstances when it is appropriate to use dilution ventilation. For example, many candidates did not appreciate that for dilution ventilation to be appropriate the contaminant (hazardous substance) it is to control should not be generated close to the worker's breathing zone.

In part (b) understanding of the design and operation of the dilution ventilation was limited. Many candidates did refer to air change rates or air throughput rates, but few mentioned that the design required was dependent on the properties of the contaminant it was aiming to control. For example, the density of a contaminant can determine where the inlets or outlets should be positioned.

Given the limited responses to parts (a) and (b) it was encouraging to see that many candidates carried out the calculation required in part (c). Those candidates were able to confirm that the dilution ventilation system described met the minimum specification of 10 air changes per hour. Some candidates went on to comment that it would be preferable if the reliability of the dilution ventilation were increased further to the upper end of the specification (15 air changes per hour). Then sufficient dilution of the contaminant and the avoidance of it accumulating in 'dead spots' was more likely.

The overall performance on this final compulsory Section A question was limited, with the average mark being well under half marks.

---

**Question 7** *Farmers, veterinary workers and sheep shearers often need to manually handle live animals such as sheep, pigs or goats as part of their work. In these situations the load is the live animal.*

- (a) **Describe** factors associated with the load that increase the risk of these manual handling activities. (4)
- (b) **Outline** a range of other risk factors that should be considered when carrying out manual handling risk assessments in these situations. (6)
- (c) **Outline** practical control measures that could be used in these situations to help reduce the risk of a manual handling injury. (10)
- 

This question assessed candidates' knowledge and understanding of learning outcomes in 9.1: Outline types, causes and relevant workplace examples of injuries and ill-health conditions associated with repetitive physical activities, manual handling and poor posture; and 9.2: Explain the assessment and control of risks from repetitive activities, manual handling and poor posture.

This question presented candidates with a scenario to which they needed to apply their knowledge of manual handling assessment and risk control. The idea that the load is a live animal and the working environment less than ideal, presents some specific considerations when applying the task, individual, load, environment (TILE) approach to manual handling assessment across parts (a) and (b) of this question.

Part (a) was only asking candidates to consider the **load** and some strayed away from this and included factors in relation to the environment, individual and task. This wasted time and then left candidates either repeating themselves or omitting relevant content in part (b). When questions are broken down into parts candidates are advised to read and re-read the whole question carefully before starting to plan and write their answer.

Those candidates who restricted their answer in part (a) to the 'load factors' performed better. Factors including the weight of the animal, which may be great or unknown; and the difficulty of holding or gripping the live animal, were commonly mentioned. Some candidates were able to describe scenario-specific factors such as the animal potentially having sharp teeth or horns. A few candidates recognised that animal mood can greatly affect the risks associated with handling this load - perhaps they were drawing on first-hand experience of taking pets to the vet. Suggesting a particular factor that could affect animal mood was worthy of an additional mark, such as motherhood or separation from the herd among valid factors.

In part (b) candidates were expected to concentrate on the other parts of the TILE approach to manual handling assessment and outline a range of risk factors covering the environment, task and individual. Those candidates who focused only on one or two of these areas were not able to gain full marks. The question specifically asked for a range of factors. Many candidates recognised that the environment may be outside or in an animal shed, therefore lighting may be limited, or the surfaces slippery due to weather or animal faeces. Few candidates suggested that lack of experience in the individual carrying out the manual handling could affect the risk and should be taken into account in the risk assessment.

In part (c) candidates were able to outline some control measures, but few candidates provided a range of controls sufficient to gain the maximum of ten marks that were available. The use of pens, gates and fences were all similar points and while valid did not contribute significantly to the range of controls. Some candidates suggested that changing the workplace layout and using ramps could either avoid lifting animals or assist those attending to the animals by preventing them having to stoop and bend. Few if any candidates mentioned that in the longer term selecting less aggressive or more docile breeds could be helpful. However, using sedation was commonly mentioned.

This was the most popular question choice in Section B with 86% of candidates choosing to answer this. The average mark achieved was just above half marks.

---

**Question 8**

*Nurses working in a radiotherapy treatment facility use a liquid to treat patients that contains an ionising radioactive material. The liquid is prepared by the nurses before they administer it to the patients. After the treatment, they clean the area and equipment before disposing of any remaining liquid.*

- (a) **Outline** how nurses could be exposed to the radioactive material while carrying out this work **AND**, in **EACH** case, **identify** the corresponding route of entry. (4)
- (b) **Outline** practical control measures to help reduce the nurses' exposure to the radioactive material while they are carrying out this work. (16)
- 

This question assessed candidates' knowledge and understanding of learning outcome 7.3: Explain the effects of exposure to ionising radiation, its measurement and control (Outline the effects of exposure to ionising radiation, its measurement and control, in the 2015 specification).

Reasonable answers to part (a) meant many candidates gained at least three of the four possible marks. Marks were sometimes missed because candidates did not link the outline of how the nurses could be exposed with the specific route of entry, which is clearly asked for in the question – shown by the emboldening of the words **AND** and **EACH**. For example, in order to gain one of the marks in part (a) it would be necessary to say that the nurse could be exposed while handling the liquid if it contaminated the hands and then it was accidentally ingested.

When answering part (b) many answers lacked detail. Candidates made brief statements such as the nurses must wear PPE. At Diploma level this is not enough to gain marks. This is a specific scenario where the PPE will be very specific and relevant examples of the PPE needed should have been given. This could include wearing protective glasses or a face shield when preparing or handling the liquid; and putting on an additional lab coat or overalls when entering the patient area, or when treating the patient. Wearing lead aprons was rarely mentioned but would have gained marks.

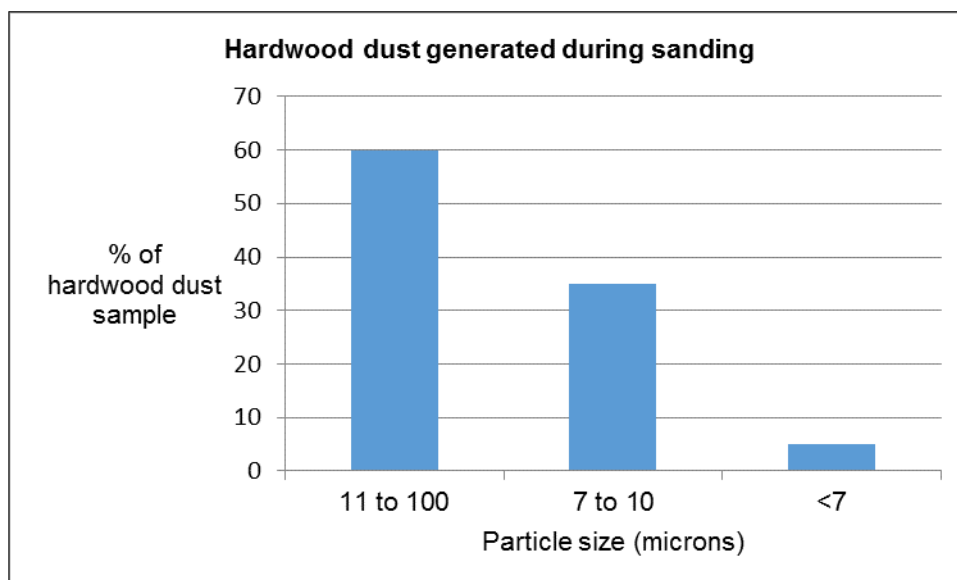
Most candidates did not consider the various stages in the treatment process when thinking about practical control measures. The question indicates that the stages involve: preparing the liquid, administering the liquid, cleaning down the area after treatment and disposing of the remaining liquid. Those candidates who noted these stages given in the question produced a wider range of practical controls as they had thought about what controls were needed at each stage of the treatment process. Marks were available for having a spill kit and segregating disposable equipment contaminated with ionising radiation from other waste. Monitoring exposure of the nurses to ionising radiation using TLDs (thermoluminescent devices) was also worthy of marks.

Overall the responses to this unpopular question were limited, with the average mark being around 25% of the marks available.

---

**Question 9**

*Hardwood dust generated during sanding can be inhaled. The dust has been analysed to determine the particle size and the results are shown in the bar graph below:*



- (a) **Outline** the possible effects on health from exposure to hardwood dust. (5)
- (b) **Describe** the likely distribution of the hardwood dust in the respiratory tract of the employees and the mechanisms the body may use to defend itself following inhalation of the hardwood dust. (14)
- (c) **Identify** a type of health surveillance for employees exposed to hardwood dust. (1)
- 

This question assessed candidates' knowledge and understanding of learning outcomes 1.3: Describe the main effects and routes of attack of chemicals on the human body (equivalent to 2.1: Explain the main routes of entry and the human body's defensive responses to hazardous substances, in the 2015 specification); and 2.1: Outline the factors to consider when assessing risks from hazardous substances (equivalent to 2.3: Outline the factors to consider when undertaking assessment and evaluation of risks from hazardous substances, in the 2015 specification).

This popular question produced reasonably good responses and the average mark attained was just under half marks.

Candidates often missed out on marks in part (a) as most had very limited knowledge of the health effect of hardwood dust. For example, that it can cause nasal cancer. Course providers are reminded that there is a set list of hazardous substances given in both the 2010 and 2015 syllabus specifications. Both lists contain hardwood dust. For these named substances candidates are expected to be able to outline the health effects. There was a good range of possible effects that could have been outlined for the five marks available.

Most candidates performed reasonably well on part (b) where candidates were presented with some graphical information. Health and safety practitioners should feel able to interpret and make use of graphical information as part of their day-to-day work. However, few candidates referred to this in their answers. It is a reasonable expectation that when numerical information is provided in the question, it is then referred to in the responses given.

Marks were available for referring to the percentages of hardwood dust that were present within each particle size range (ie 60%, 35% and 5%). While it was possible to gain full marks in part (b) without reference to these percentages, reference to them would have gained three of the fourteen marks available.

Part (c) presented little difficulty with virtually all candidates able to refer to lung function tests as a relevant type of health surveillance. Reference to skin inspections would have also gained marks but was not mentioned by most candidates.

---

**Question 10** *The Health and Safety Executive (HSE) have defined six stress management standards that identify the main causes of work-related stress. Two of these standards are demands and role.*

- (a) **Explain** practical ways an organisation can reduce work-related stress associated with:
- (i) demands; (6)
  - (ii) role. (4)
- (b) *An organisation has announced it is being taken over by a competitor and this will result in significant change throughout the organisation.*
- (i) **Identify** reasons why this change may cause an increase in work-related stress. (4)
  - (ii) *A key part of reducing work-related stress associated with this change is to have good communication with the workforce. Outline practical ways in which the organisation can make arrangements for good communication at this time.* (6)
- 

This question assessed candidates' knowledge and understanding of learning outcomes 8.2: Explain the identification and control of workplace stress with reference to legal duties and other standards (Explain the identification and control of workplace mental ill-health with reference to legal duties and other standards in the 2015 specification); and 8.1: Explain the scope, effects and causes of work-related stress (Explain the effects and causes of common types of mental ill-health within the workplace, in the 2015 specification).

The focus of this question was on **three** of the HSE's stress management standards. The standards' demands and role were covered in part (a), and part (b) of the question considered the standard of 'change' as it would apply in a real life situation.

Most candidates were able to give reasonable responses to parts (a) (i) and (ii). However, a common mistake was to write about how stress is caused through demands and role, rather than to offer practical ways to reduce the stress resulting from these aspects of a person's work-life. Those candidates who performed well in part (a) gave practical suggestions in sufficient detail necessary to provide an explanation. Most candidates mentioned planning work to help manage stress caused by demands; but few included the use of flexible working to accommodate peaks and troughs in workload. Few candidates mentioned the importance of having any performance incentive schemes designed in such a way as to be fair.

The use of written job descriptions was commonly mentioned as a practical way of reducing stress caused by role. Few mentioned that any changes in job role needed to be consulted on and agreed in advance. The use of organisational charts also helps to clarify roles within the wider organisation and avoid stress resulting from confusion or conflicts over reporting lines.

Change is one of the six stress management standards and part (b) addressed a common way in which major change within an organisation can cause work-related stress. Most candidates were able to identify a number of reasons why a company takeover can cause stress. The financial concerns around possible redundancy were frequently mentioned. However, only some candidates appreciated that changes in work location, with impacts on commuting patterns and the knock-on effects on family life, were also a significant cause of stress during a company takeover. Perhaps candidates were drawing on personal experience here.

Answers to part (b) (ii) were often limited, with many candidates only mentioning holding meetings and sending out emails as practical ways of communicating the changes. For the six marks available candidates needed to outline a range of practical communication arrangements. The importance of having a published timetable for the proposed changes was often missed. This is to help ensure everyone knows what is to happen and when. Having an 'official' means of communication is also important. If this is known and used by all, it can help to avoid rumours and mixed messages developing during the change, all of which can increase work-related stress.

This was a popular question answered by nearly three quarters of all candidates and the average mark achieved was just under half marks.

---

<b>Question 11</b>	<i>In deep underground mines there are high temperatures and high levels of humidity. These conditions arise naturally from the surrounding earth as well as through mining processes.</i>	
(a)	<b>Identify</b> specific health effects associated with working in these conditions.	(2)
(b)	(i) <b>Explain</b> how the working conditions can affect the health of the employees.	(3)
	(ii) <b>Explain</b> how the working conditions can affect the safety of the employees.	(1)
(c)	<b>Outline</b> practical measures to help reduce the risks associated with working in an environment with high temperatures and high levels of humidity.	(14)

---

This question assessed candidates' knowledge and understanding of learning outcome 10.1: Explain the need for, and factors involved in, the provision and maintenance of thermal comfort in the work environment (Explain the need for, and factors involved in, the provision and maintenance of temperature in both moderate and extreme thermal environments, in the 2015 specification).

Candidates answering this question often produced limited answers only gaining a proportion of the marks available in each of the parts of the question. Health effects required in part (a) were limited with most candidates only mentioning heat exhaustion.

In part (b) candidates were able to explain the health effects better than they were able to explain the safety effects of this working environment. In (b) (i) candidates were able to develop the explanation by linking the inability of the body to sweat because of the high humidity, so heat loss was difficult, leading to a core body temperature rise and the possibility of death. There was less to say about the safety effects and therefore fewer marks available. Many candidates did not recognise that concentration could be affected with an increased risk of accidents.

Answers to part (c) often contained relevant practical measures, but the range of measures outlined was limited, so few, if any candidates were able to gain the full fourteen marks available. The usual control measures for 'hot environments' were mark worthy, such as taking more rest breaks or using job rotation, isotonic drinks, cool refuges, etc. Fewer candidates thought about the actual scenario of the underground mine and the mining activities. Those who did were able to outline a wider range of practical controls such as siting equipment that generates heat, away from ventilation air intakes. Switching off equipment when not in use is another important control measure. Controlling underground water sources or leaks would also assist in reducing humidity.

Just under half of the candidates chose to answer this final Section B question and the average mark was under half marks.



## Examination technique

The following issues are consistently identified as the main areas in need of improvement for candidates undertaking Diploma level qualifications:

### Candidates misread/misinterpreted the question

NEBOSH questions are systematically and carefully prepared and are subject to a number of checks and balances prior to being authorised for use in question papers. These checks include ensuring that questions set for the Diploma level qualifications relate directly to the learning outcomes contained within the associated syllabus guides. The learning outcomes require candidates to be sufficiently prepared to provide the relevant depth of answer 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 suggest that while many candidates do begin their answer satisfactorily and perhaps gain one or two marks, they then lose sight of the question and include irrelevant information. Although further points included in an answer can relate to the general topic area, these points are not focused on the specific learning outcome and marks cannot be awarded. However, some candidates appear 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 specific 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.

Examiners noted a tendency on the part of many candidates to write about things that were not asked for, despite the fact that guidance as to what to cover had been given in the question. An example is a question where candidates were instructed that there was no need to make reference to specific control measures and yet did so. In another example candidates wrote about selection of PPE when the question wording had clearly stated that this had already been undertaken. Another example was where candidates wrote about barriers to rehabilitation without relating them to the bio-psychosocial model, even though the question specifically asked them to do this.

Some candidates wrote large amounts of text on a single topic where only one mark could be awarded. Candidates did not recognise that the amount of marks awarded to each section gives an indication of the depth of the answer required.

It would therefore appear that a sizeable number of candidates misread some of the questions, to their disadvantage. This should be a relatively easy pitfall to overcome; candidates should ensure that they make full use of the 10 minutes reading time to understand what each question requires. 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. An answer plan will often be helpful in ensuring that all aspects of the question are attended to; maps and plans should be kept simple so as not to use up too much examination time; if all aspects are not dealt with it will be difficult to gain a high mark. Candidates should not assume when they see a question that it is exactly the same as one that they may have seen in the past; new questions are introduced and old questions are amended. It is therefore of the utmost importance that questions are read carefully and the instructions that they give are followed.

It may help if, when preparing for the examinations, candidates write out their answers in full and ask a tutor or other knowledgeable third party to mark their work. In so doing, issues with understanding can be noted and remedial action taken.

Course providers and candidates should note that various means are used to draw attention to keywords in examination questions. These means include emboldened and italicised text and the use of words in capitals. These means are intended to draw the candidate's attention to these words and this emphasis should then be acted upon when making a response. These devices can often assist in giving guidance on how to set out an answer to maximise the marks gained. For example: **Identify THREE** things to be considered **AND** for **EACH**.....

Candidates often have a reasonable body of knowledge and understanding on the topic covered by a question, but they have not been able to apply this to the examination question being asked. This could be because sufficient time has not been taken to read the question, noting the words being emphasised.

When preparing candidates for examination, or offering advice on examination technique, accredited course providers should stress that understanding the question requirements and the sub-structure of the response to the question is the fundamental step to providing a correct answer. Rather than learning the 'ideal answer' to certain questions effort would be better spent in guided analysis on what a question requires. The rote learning of answers appears to close the candidates' minds to the wider (and usually correct) possibilities.

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

There are instances where candidates repeat very similar points in their answers, sometimes a number of times. This is easily done in the stressful environment of the examination. However, once a point has been successfully made and a mark awarded for it, that mark cannot be awarded again for similar points made later in the answer. In some cases, particularly where questions had more than one part, candidates gave an answer to, say, part (b) of a question in part (a), meaning that they needed to repeat themselves in part (b) thus wasting time.

One possible reason for this might be that candidates have relatively superficial knowledge of the topic - a view supported by the low marks evident in some answers. It appears that, faced with a certain number of marks to achieve and knowing that more needs to be written, but without detailed knowledge, candidates appear to opt to rephrase that which they have already written in the hope that it may gain further marks. Another possible reason is a failure to properly plan answers, especially to the Section B questions - it would appear that candidates sometimes become 'lost' in their answers, forgetting what has already been written. It may be due either to a lack of knowledge (so having no more to say) or to limited answer planning, or to a combination of the two. When a valid point has been made it will be credited, but repetition of that point will receive no further marks. Candidates may have left the examination room feeling that they had written plenty when in fact they had repeated themselves on multiple occasions, therefore gaining fewer marks than they assumed.

Candidates sometimes think they have written a lengthy answer to a question and are therefore deserving of a good proportion of the marks. Unfortunately, quantity is not necessarily an indicator of quality and sometimes candidates make the same point several times in different ways. Examiners are not able to award this same mark in the mark scheme a second time. The chance of repetition increases when all marks for a question (eg 10 or 20) are available in one block. It can also happen when a significant proportion of the marks are allocated to one part of a question.

This issue is 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.

As with the previous area for improvement ('misreading the question') writing an answer plan where points can be ticked off when made, or structuring an answer so that each point made is clearly shown, for example by underlining key points, can be of great use. This technique aids candidates and makes it much clearer in the stress of the examination for candidates to see which points have been made and reduce the chances of the same point being made several times. Course providers are encouraged to set written work and to provide feedback on written answers, looking to see that candidates are able to come up with a broad range of relevant and accurate points; they should point out to candidates where the same point is being made more than once.

Candidates are advised to read widely. This means reading beyond course notes in order to gain a fuller understanding of the topic being studied. In that way, candidates will know more and be able to produce a broader and more detailed answer in the examination. Candidates may also find it helpful to read through their answers as they write them in order to avoid repetition of points.

Course providers should provide examination technique pointers and practice as an integral part of the course exercises. Technique as much as knowledge uptake should be developed, particularly as many candidates may not have taken formal examinations for some years.

### **Candidates produced an incoherent answer**

Candidates produced answers that lacked structure, digressed from the question asked and were often incoherent as a result. In many cases, there seemed to be a scatter gun approach to assembling an answer, which made that answer difficult to follow. Answers that lack structure and logic are inevitably more difficult to follow than those that are well structured and follow a logical approach. Those candidates who prepare well for the unit examination and who therefore have a good and detailed knowledge commensurate with that expected at Diploma level, invariably supply structured, coherent answers that gain good marks; those candidates who are less well prepared tend not to do so.

Having good written communication skills and the ability to articulate ideas and concepts clearly and concisely are important aspects of the health and safety practitioner's wider competence. Candidates should be given as much opportunity as possible to practice their writing skills and are advised to practice writing out answers in full during the revision phase. This will enable them to develop their knowledge and to demonstrate it to better effect during the examination. It may help if candidates ask a person with no health and safety knowledge to review their answers and to see whether the reviewer can understand the points being made.

### **Candidates did not respond effectively to the command word**

A key indicator in an examination question will be the command word, which is always given in **bold** typeface. The command word will indicate the depth of answer that is expected by the candidate.

Generally, there has been an improvement in response to command words, but a number of candidates continue to produce answers that are little more than a list even when the command word requires a more detailed level of response, such as 'outline' or 'explain'. This is specifically addressed in the following section dealing with command words, most commonly failure to provide sufficient content to constitute an 'outline' was noted. Failure to respond to the relevant command word in context was also a frequent problem hence information inappropriate to the question was often given.

Course exercises should guide candidates to assessing the relevant points in any given scenario such that they are able to apply the relevant syllabus elements within the command word remit.

### **Candidate's handwriting was illegible**

It is unusual to have to comment on this aspect of candidate answers, as experienced Examiners rarely have difficulties when reading examination scripts. However, Examiners have independently identified and commented on this as an area of concern. While it is understood that candidates feel under pressure in an examination and are unlikely to produce examination scripts in a handwriting style that is representative of their usual written standards; it is still necessary for candidates to produce a script that gives them the best chance of gaining marks. This means that the Examiners must be able to read all the written content.

Some simple things may help to overcome handwriting issues. Using answer planning and thinking time, writing double-line spaced, writing in larger text size than usual, using a suitable type of pen, perhaps trying out some different types of pens, prior to the examination. In addition, it is important to practise hand writing answers in the allocated time, as part of the examination preparation and revision. Today, few of us hand-write for extended periods of time on a regular basis, as electronic communication and keyboard skills are so widely used. Accredited course providers should encourage and give opportunities for candidates to practise this hand-writing skill throughout their course of study. They should identify at an early stage if inherent problems exist. These can sometimes be accommodated through reasonable adjustments, eg by the provision of a scribe or the use of a keyboard. 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.

NEBOSH recommends to accredited course providers that candidates undertaking this qualification should reach a minimum standard of English equivalent to an International English Language Testing System score of 7.0 or higher in IELTS tests in order to be accepted onto a Diploma level programme.

For further information please see the latest version of the IELTS Handbook or consult the IELTS website: [http://www.ielts.org/institutions/test\\_format\\_and\\_results.aspx](http://www.ielts.org/institutions/test_format_and_results.aspx)

Candidates wishing to assess their own language expertise may consult the IELTS website for information on taking the test: <http://www.ielts.org/institutions/faqs.aspx>

Course providers are reminded that they must ensure that these standards are satisfied or additional tuition provided to ensure accessible and inclusive lifelong learning.

### **Candidates did not answer all the questions**

It has been noted that a number of candidates do not attempt all of the questions on the examination and of course where a candidate does not provide an answer to a question, no marks can be awarded. Missing out whole questions immediately reduces the number of possible marks that can be gained and so immediately reduces the candidate's opportunity for success. There can be several reasons for this issue: running out of the allocated time for the examination, a lack of sufficient knowledge necessary to address parts of some questions, or in other cases, some candidates have a total lack of awareness that the topic covered in certain questions is even in the syllabus.

If candidates have not fully studied the breadth of the syllabus they may find they are not then equipped to address some of the questions that are on a question paper. At that late stage there is little a candidate can do to address this point. Responsibility for delivering and studying the full breadth of the syllabus rests with both the course provider and the individual candidates and both must play their part to ensure candidates arrive at the examination with a range of knowledge across all areas of the syllabus.

### **Lack of technical knowledge required at Diploma level**

In Section A, candidates must attempt all questions and it was clear that some struggled with those requiring more detailed and technical knowledge. For example, it is not acceptable that at Diploma level, candidates have no knowledge of the principles of good practice that underpin COSHH. Unfortunately this was often found to be the case in responses to questions.

In Section B, where candidates have a choice of questions, many sought to avoid those questions with a higher technical knowledge content. For example questions on radiation, lighting and vibration. Practitioners operating at Diploma level need to be confident with the technical content of the whole syllabus and this does require a significant amount of private study, particularly in these areas of the syllabus that are perhaps less familiar to them in their own workplace situations.

### **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 attachment to memorised answer schemes that addressed different question demands.

While knowledge of material forms a part of the study for a Diploma-level qualification, a key aspect being assessed is a candidate's **understanding** of the topic and reciting a pre-prepared and memorised answer will not show a candidate's understanding. In fact, if a candidate gives a memorised answer to a question that may look similar, but actually is asking for a different aspect of a topic in the syllabus, it shows a lack of understanding of the topic and will inevitably result in low marks being awarded for that answer.

## Command words

Please note that the examples used here are for the purpose of explanation only.

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

### Explain

*Explain: To provide an understanding. To make an idea or relationship clear.*

This command word requires a demonstration of an understanding of the subject matter covered by the question. Superficial answers are frequently given, whereas this command word demands greater detail. For example, candidates are occasionally able to outline a legal breach but do not always explain why it had been breached. A number of instances of candidates simply providing a list of information suggests that while candidates probably have the correct understanding, they cannot properly express 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 this remains a skill that health and safety professionals are frequently required to demonstrate.

When responding to an 'explain' command word it is helpful to present the response as a logical sequence of steps. Candidates must also be guided by the number of marks available. When asked to '**explain** the purposes of a thorough examination and test of a local exhaust ventilation system' for 5 marks, this should indicate a degree of detail is required and there may be several parts to the explanation.

Candidates are often unable to explain their answers in sufficient detail or appear to become confused about what they want to say as they write their answer. For example, in one question many candidates explained the difference between the types of sign, explaining colours and shapes of signs without explaining how they could be used in the depot, as required by the question.

### 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.*

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. Candidates have a tendency to confuse 'describe' with 'outline'. This means that less detailed answers are given that inevitably lead to lower marks. This may indicate a significant lack of detailed knowledge and/or a lack of ability to articulate the course concepts clearly. Candidates should aim to achieve a level of understanding that enables them to describe key concepts.

Some candidates see the command word 'describe' as an opportunity to fill out an answer with irrelevant detail. 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.

### Outline

*Outline: To indicate the principal features or different parts of.*

This is probably the most common command word but most candidates treat it like 'identify' and provide little more than a bullet pointed list. As the NEBOSH guidance on command words makes clear, 'outline' is not the same as 'identify' so candidates will be expected to give more detail in their answers. 'Outline' requires a candidate to indicate '*the principal features or different parts of*' the subject of the question.

An outline is more than a simple list, but does not require an exhaustive description. Instead, the outline requires a brief summary of the major aspects of whatever is stated in the question. 'Outline' questions usually require a range of features or points to be included and often 'outline' responses can lack sufficient breadth, so candidates should also be guided by the number of marks available. Those candidates who gain better marks in questions featuring this command word give brief summaries to indicate the principal features or different parts of whatever was being questioned. 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.

## Identify

*Identify: To give a reference to an item, which could be its name or title.*

Candidates responding to identify questions usually provide a sufficient answer. Examiners will use the command word 'identify' when they require a brief response and in most cases, one or two words will be sufficient and further detail will not be required to gain the marks. If a question asks '**identify** typical symptoms of visual fatigue', then a response of 'eye irritation' is sufficient to gain 1 mark. If having been asked to identify something and further detail is needed, then a second command word may be used in the question.

However, in contrast to 'outline' answers being too brief, many candidates feel obliged to expand 'identify' answers into too much detail, with the possible perception that more words equals more marks. This is not the case and course providers should use the NEBOSH guidance on command words within their examination preparation sessions in order to prepare candidates for the command words that may arise.

## Give

*Give: To provide short, factual answers.*

'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.

## Comment

*Comment: To give opinions (with justification) on an issue or statement by considering the issues relevant to it.*

For example, if candidates have already calculated two levels of the exposure to wood dust and are then asked to comment on this the issues would include the levels of exposure they had found, and candidates would need to give their opinion on these, while considering what is relevant. The question guides on what may be relevant for example, did it meet the legal requirements, did it suggest controls were adequate, so based on that guidance, did exposure need to be reduced further or did anything else need to be measured or considered? If candidates comment with justification on each of these areas they would gain good marks in that part of question.

Few candidates are able to respond appropriately to this command word. At Diploma level, candidates should be able to give a clear, reasoned opinion based on fact.

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).



nebosh

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](mailto:info@nebosh.org.uk)

[www.nebosh.org.uk](http://www.nebosh.org.uk)