
Examiners' Report

NEBOSH NATIONAL DIPLOMA IN OCCUPATIONAL HEALTH AND SAFETY

UNIT B: HAZARDOUS AGENTS IN THE WORKPLACE

JULY 2017



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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 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.

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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 July 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 **Outline** what should be considered when selecting workplace seating to minimise ergonomic risks to workers. **(10)**

This question assessed candidates' knowledge and understanding of learning outcome 9.2: Explain the assessment and control of risks from repetitive activities, manual handling and poor posture.

The syllabus guide refers to the HSE publication 'Seating at Work HSG57', third edition 2002, knowledge of which was helpful when answering this question.

Candidates were often unable to outline a sufficiently wide range of considerations for the 10 marks available. Many candidates focused on obvious considerations such as adjustability for both the backrest position and seat height, but few mentioned adjustability of arm rest positions, especially as this could prevent the chair being positioned close enough to a work surface or work position.

Being able to access adjusting mechanisms on the seat, while seated, is also another important consideration that was overlooked by many candidates.

Many candidates restricted their answers to seating in the context of a display screen equipment workstation and while this was relevant it was not cited in the question. This approach may have limited candidate's thinking and therefore the marks that could be awarded. The average mark for this question was under half marks. Course providers and candidates are advised to refer to the reference document in the syllabus HSG 57.

Question 2 A contractor is carrying out clearance work in a number of derelict houses. The contractor is concerned that their employees may be exposed to blood-borne viruses (BBVs), such as HIV and hepatitis, while carrying out this work.

(a) **Consider** why these employees may be exposed to BBVs. **(7)**

(b) **Outline** equipment that these employees could use as part of the control measures for this work. **(3)**

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 deliberate and non-deliberate exposure to biological agents at work (Explain the assessment and control of risk from exposure to biological agents at work, in the 2010 specification).

When answering part (a) candidates were expected to consider that there was a likelihood that the derelict houses had been used by drug users. There was a possibility discarded sharps contaminated by blood would be present and those carrying out the house clearance may accidentally come into contact with these sharps. This explanation of 'why' should also have demonstrated the candidate's understanding of the possible transmissions routes for BBVs. Some candidates mistakenly cited the routes of entry as being ingestion and inhalation.

Part (b) was limited to an outline of equipment control measures and so candidates who mentioned training and information did not gain marks. Vague references to PPE were not credited and instead candidates were expected to refer to specific types of personal protective equipment such as cut-proof or puncture-resistance clothing. Suggestions that using bin bags for the waste demonstrated a lack of understanding of the risks and instead candidates were expected to outline that rigid containers were needed for the waste, as well as specific sharps containers for the sharps.

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

Question 3	A leisure spa provides ultraviolet (UV) tanning equipment. The equipment uses UV sources with a higher intensity than normal sunlight in order to accelerate tanning.	
(a)	(i) Identify an acute effect that could result from <i>this</i> type of exposure to UV radiation.	(1)
	(ii) Identify a chronic effect that could result from <i>this</i> type of exposure to UV radiation.	(1)
(b)	Outline information that the leisure spa employees should give to customers planning to use the tanning equipment.	(8)

This question assessed candidates' knowledge and understanding of learning outcome 7.2: Explain the effects of exposure to non-ionising radiation, its measurement and control.

Candidates answered both (a) (i) and (ii) well and easily identified acute and chronic effects of UV radiation in this context. Reference to arc eye was not relevant in this context.

When outlining information that should be given to customers most candidates were able to provide good answers. A key point that was commonly missed was the need to exclude children from areas where their exposure to UV radiation could occur (this is referred to as the 'restricted zone' in Department of Health guidance). Customers should be informed that accompanying children are to remain elsewhere, perhaps in the reception or waiting areas. This point is relevant and distinct from the information stating that only those '18 and over' can use the UV tanning equipment.

The syllabus at learning outcome 7.2 includes 'General duties to manage exposure to non-ionising radiation as required by existing legislation', but few candidates seemed to be aware of the relevant legislation which is the Sunbeds (Regulations) Act 2010. This legislation is relevant when considering what information should be given to customers.

The average mark for this question was over half marks and the overall performance was good.

Question 4

A residential care home for the elderly employs managers, cleaners, carers and drivers. The drivers use their own cars or a communal minibus to transport residents. The care home is about to review its smoking policy.

- (a) **Identify** legislation that should be considered when reviewing the smoking policy. (2)
- (b) **Outline** arrangements for **BOTH** smokers and non-smokers that will need to be included in the new smoking policy in order to comply with the legislation. (8)
-

This question assessed candidates' knowledge and understanding of learning outcome 10.3: Explain the need for welfare facilities and arrangements in fixed and temporary workplaces.

In particular the syllabus indicates candidates should have knowledge and understanding of 'the provision of facilities for smokers, company vehicles, care homes and flats'. However, many candidates were challenged by this question and had difficulty providing answers to both parts (a) and (b).

The Workplace (Health, Safety and Welfare) Regulations are relevant and should have been identified in an answer to (a). Marks were also given for reference to any 'smoke-free' legislation as that is referred to differently in different parts of the UK.

In part (b) few candidates applied the information provided in the stem of the question to structure their answer. The policy should have outlined the differences in the practical arrangements that would be necessary for the drivers, the employees (managers, carers and cleaners) and the residents.

While it may be appropriate and a legal requirement to require employees to go outside into a designated area to smoke and this should be where others are not affected by second-hand smoke; it is clearly not appropriate nor is it a legal requirement for residents to do the same, as this is their home.

The practical and legal arrangements for drivers differ, depending on whether they are using a company vehicle (minibus) or their own car. Few answers demonstrated an appreciation of these distinctions.

Some candidates recognised that a current issue facing employers is the use of e-cigarettes and so mentioned these. Marks were available for outlining that employers are able to determine their own policy on the use of e-cigarettes.

The average mark for this question was well below half marks despite it being based on real life scenarios that are included in the syllabus. Course providers are advised to review their materials to check it refers to these situations.

Question 5 Information relating to the solvent Butan-2-one in the Health and Safety Executive (HSE) document EH40, is as follows:

Substance	CAS Number	Workplace exposure limit				Comments
		Long-term exposure limit (8-hr TWA reference period)		Short-term exposure limit (15 minute reference period)		
		ppm	mg/m ³	ppm	mg/m ³	
Butan-2-one	78-93-3	200	600	300	899	Sk, BMGV

- (a) **Identify** what BMGV stands for. (1)
- (b) **Give** the meaning of the term '*workplace exposure limit*' (WEL). (2)
- (c) **Outline** why Butan-2-one has been assigned **BOTH** a WEL and a BMGV in EH40. (4)
- (d) **Outline** legal differences between a WEL and a BMGV. (3)
-

This question assessed candidates' knowledge and understanding of learning outcomes 4.1: Explain how workplace exposure limits are used in the workplace (Explain workplace exposure limits (WELs), the means by which they are established, and their application to the workplace, in the 2010 specification); and 4.3: Outline the principles of biological monitoring.

Most candidates were able to give completely accurate answers to part (a) and therefore were awarded 1 mark for identifying BMGV stands for 'biological monitoring guidance value'.

When giving the meaning of the term '*workplace exposure limit*' (WEL), accuracy was sometimes missing. Course providers and candidates should refer to paragraph 5 in the HSE document EH40.

Candidates did not need any specialist knowledge about the particular chemical Butan-2-one in order to answer part (c). Instead they needed an understanding of how to read information presented in EH40. 'The status and use of EH40' is included in the National Diploma syllabus in learning outcome 4.1.

This extract of information demonstrated that this solvent has the potential to be inhaled and therefore it has been assigned a WEL and it can also be absorbed through the skin so it is assigned the 'Sk' notation. Simply controlling exposure via one of these possible routes of entry will not be sufficient to adequately control the overall risks of exposure.

Most candidates were able to outline the legal difference between a WEL and BMGV pointing out that exceeding the WEL does breach the Control of Substances Hazardous to Health Regulations 2002 whereas the BMGV is only guidance.

This question relied on candidates having specific knowledge about these technical terms as well as an understanding of their relevance. The average mark for this question was below half marks, highlighting that many candidates lacked this knowledge and understanding. Course providers are encouraged to regularly refer to and use the document EH40 when delivering this part of the National Diploma syllabus.

Question 6	(a)	The Control of Vibration at Work Regulations 2005 set exposure values.	
		Give the meaning of the term ' <i>exposure limit value</i> ' (ELV).	(2)
	(b)	A builder is removing an area of concrete paving using a hand-held concrete breaker. The manufacturer indicates that the vibration magnitude emitted by the concrete breaker is 10m/s^2 .	
		Outline why the actual vibration experienced by the builder could be higher than the manufacturer's estimate.	(3)
	(c)	It will take four hours to complete this task using the concrete breaker and the builder's vibration exposure while carrying out this task will be $7.1\text{m/s}^2 \text{ A}(8)$.	
		Outline a range of practical steps that the builder could take in order to complete <i>this task with this equipment</i> and comply with the Control of Vibration at Work Regulations 2005.	(5)

This question assessed candidates' knowledge and understanding of learning outcomes 6.5: Explain the basic physical concepts relevant to vibration; 6.6: Explain the effects of vibration on the individual; 6.7: Explain the measurement and assessment of vibration exposure; and 6.8: Explain the principles and methods of controlling vibration and vibration exposure (Explain the principles of controlling vibration and vibration exposure, in the 2010 specification).

Few candidates were able to give a sufficiently accurate meaning of ELV to gain the 2 marks available. Course providers are urged to remind students of the importance of quoting the correct units when referring to vibration dose. The correct units are $\text{m/s}^2 \text{ A}$ (8) or $\text{ms}^{-2} \text{ A}$ (8).

Most candidates showed a good understanding of the reasons for a difference between actual vibration exposure and that provided by manufacturer's data, and often full marks were awarded for part (b).

In part (c) some candidates overlooked the italicised remark in the question '*with this equipment*'. Therefore, they wasted time outlining how alternative equipment with a lower vibration magnitude could be used. No marks were available for this. Candidates are reminded that they need to read and re-read the question carefully.

Answers often outlined how more employees could be engaged in the task, each using the equipment for shorter periods of time until they had reached their personal exposure limit (ie job rotation) for that 8-hour period. Many candidates missed the more detailed point that these employees should not then have further exposure to vibration that day while carrying out other tasks.

Numerical values were given in part (c) of this question, therefore marks were available for making reference to these in the answer. Candidates needed to recognise that a vibration exposure of $7.1\text{m/s}^2 \text{ A}(8)$ was above the ELV and that in order to comply with the Control of Vibration Regulations 2005 this would need to be below $5\text{m/s}^2 \text{ A}(8)$ in order to comply with the law.

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

Question 7 A machine operator is required to work at a number of different machines during a normal 8-hour working day. Static measurements of the sound pressure levels are recorded and are shown in the table below. The duration working at each machine or taking a break is also shown.

Machine	Duration (hours)	Sound pressure level L_{Aeq} (dB)
1	4	84
2	2	87
3	1	93
None (on break)	1	Insignificant

- (a) **Give** the meaning of L_{Aeq} (dB(A)). (3)
- (b) **Outline** how these sound pressure levels would be measured. (5)
- (c) Using the noise exposure ready-reckoner shown in the Appendix and the data in the table, **calculate** the daily personal noise exposure (LEP,d) for the operator. (5)
You should include detailed working in your answer.
- (d) The result of a personal dosimetry measurement of noise exposure for this operator on a similar day provides an LEP,d that is 4dB(A) greater than that calculated in part (c).

Other than equipment errors, outline possible reasons for the difference. (3)
- (e) The operator's daily work routine now changes and instead of working at machine 3, the operator spends this 1 hour working in the office where the noise level is insignificant.

Demonstrate why this change has legal implications under the Control of Noise at Work Regulations 2005. (4)
You should use numerical information to assist with this demonstration.

This question assessed candidates' knowledge and understanding of learning outcomes 6.1: Explain the basic physical concepts relevant to noise; 6.3: Explain the measurement and assessment of noise exposure; and 6.4: Explain the principles and methods of controlling noise and noise exposure (Explain the principles of controlling noise and noise exposure, in the 2010 specification).

When responding to part (a) candidates were expected to consider the meaning of both parts of this term L_{Aeq} and dB(A) in order to gain all of the 3 marks available. Most candidates appreciated the significance of the A weighted reference. Some candidates did not make clear that L_{Aeq} is the **equivalent continuous** sound pressure level that is averaged over a period of time and takes account of fluctuations in noise that occur when the machines are running. Perhaps there is a lack of understanding of this term L_{Aeq} among candidates and this was highlighted again in answers to part (b).

Most candidates were able to outline what type of sound level meter should be used and where to place it, ie close to the operator's head when in the machine operating position. However, few candidates understood that the measurement needed to be taken over a sufficient period of time, such that the reading settled to within 1 dB.

Part (c) presented little challenge with most candidates gaining full marks through the correct use of the ready reckoner provided and the accurate recording of the daily personal noise exposure. If a mark was missed, it was because candidates did not use the correct units when writing their numerical answer.

Candidates needed to take note of the italicised information in part (d) of this question. This said '*Other than equipment errors...*' so marks were not available for mentioning these. However, there were a good range of other possible reasons for the difference in the results including static measurements not being taken over a representative time period. Reflected sound from the body may also have been a valid reason for the difference if the static measurements had been taken without the operator in their working position.

Responses to part (e) were generally good as candidates again demonstrated their skills with the use of the ready-reckoner to determine that the new noise exposure was reduced to 84 dB(A) $L_{EP,d}$. However, some candidates did not then demonstrate why this change had legal implications.

With only 4 marks available for both the reworked calculation and the written demonstration, it was not necessary to give a lot of detail. However, it was expected that candidates showed an appreciation that the reduced noise exposure was now below the upper exposure action value but still above the lower exposure action value, therefore the legal duties on the employer were different.

This was the least popular Section B question and was answered by less than half the candidates. The average mark achieved was reasonable at just under half marks.

Question 8	<i>'Suitable and sufficient'</i> lighting in a workplace is necessary to protect the health and safety of workers.	
(a)	Identify adverse health effects that workers could experience as a result of unsuitable or insufficient lighting.	(4)
(b)	Explain how the following features of lighting could affect the safety of workers:	
	(i) low lighting levels;	(2)
	(ii) stroboscopic effects;	(2)
	(iii) colour effects.	(2)
(c)	Lighting surveys can assess levels of illuminance in a workplace.	
	Outline what could affect levels of illuminance that are measured in a workplace.	(10)

This question assessed candidates' knowledge and understanding of learning outcome 10.2: Explain the need for suitable and sufficient lighting in the workplace, units of measurement of light and the assessment of lighting levels in the workplace.

Part (a) of the question considered only health effects and presented little challenge with candidates often gaining all 4 marks available.

Answers to part (b) were more limited. Some candidates did not give the explanation of how these features of lighting affect safety. Simply saying "low lighting means you cannot see where you are going" was not sufficient and it was necessary to explain that this could lead to more slips or trips and cause injury.

Candidates provided limited content when answering part (c). For the 10 marks available it was necessary to provide a wide range of things that can affect levels of illuminance. Some candidates did not include time of day or year, the number and height of light fittings, or the colour of surfaces and room dimensions, when presenting their answer.

This was a reasonably popular question, but the average mark achieved was under half marks.

Question 9	Workers who cut concrete kerb stones on a construction site are at risk from exposure to respirable crystalline silica (RCS) dust.	
(a)	<i>Other than</i> silicosis, identify TWO lung diseases caused by exposure to RCS.	(2)
(b)	Outline the equipment and method that an occupational hygienist would use to determine the workers' personal exposure to RCS dust.	(7)
(c)	It has been decided that workers will need to wear respiratory protective equipment (RPE) while cutting kerb stones. A face fit test is required for this RPE.	
(i)	Outline what should be considered when carrying out RPE face fit testing on site.	(5)
(ii)	Outline why the level of protection achieved by the RPE while being used on site, may be lower than that achieved during the face fit testing.	(3)
(d)	<i>Other than</i> RPE, outline control measures that could be considered to help reduce the personal exposure to RCS of the workers who cut concrete kerb stones while on site.	(3)

This question assessed candidates' knowledge and understanding of learning outcomes 2.2: Explain the identification, classification and health effects of hazardous substances used in the workplace (equivalent to 1.4: Explain the health effects of chemicals used in the workplace, in the 2010 specification); 3.1: Explain the principles of prevention and control of exposure to hazardous substances (including carcinogens and mutagens) (equivalent to 2.2: Explain the control measures for hazardous substances, in the 2010 specification); 3.4: Explain the effectiveness of various types of personal protective equipment (PPE) and the factors to consider in selection of PPE (equivalent to 3.2: Explain the various types of personal protective equipment (PPE) available for use with hazardous substances and other chemicals, their effectiveness, and the relevant specifications and standards to be met, in the 2010 specification); and 4.2: Outline the methods for sampling of airborne contaminants (Outline the strategies, methods, and equipment for the sampling and measurement of airborne contaminants, in the 2010 specification).

Identifying two lung diseases other than silicosis presented little challenge and most candidates achieved full marks in part (a) of the question.

In part (b) most candidates were familiar with the basic equipment and methods for carrying out gravimetric sampling for dust and so gained reasonable marks. However, many candidates did not specifically mention the need to use a cyclone sampling head in order to capture the respirable fraction of the silica dust. This suggested a lack of understanding as to why the small particles size of RCS presents such a significant hazard and therefore needs to be measured.

Candidates did not seem to appreciate that the respirable dust collected will not all be silica as there are other substances present in the dust generated during concrete cutting. Typical proportions of silica in concrete range from 25 - 70%. Therefore it would be necessary to either: estimate the exposure to RCS from the total respirable fraction collected; or, analytical techniques such as infra-red spectroscopy or X-ray diffraction could be used to determine the amount of RCS that workers are being exposed to.

The second half this question switched attention to the use of RPE and other control measures for RCS. There was a lack of specific knowledge of face fit testing. However, it was anticipated that many of those candidates working towards the National Diploma qualification would have either experienced this first hand or had to arrange such testing for their organisation. Most candidates mentioned the need to be clean-shaven when the test is conducted. Marks for part (ci) were limited however better answers were given for part (cii).

Course providers are encouraged to direct students to the videos freely available on-line from reputable suppliers of RPE. These can demonstrate how both qualitative and quantitative face fit testing is to be carried out. Some candidates mistakenly thought the face fit testing was carried out in-situ during exposure to RCS.

Candidates were able to perform well when responding to part (d) and often gained full marks by outlining a range of other types of control measures that could have included cutting the kerb stones on site in a sheltered area away from strong air movements.

Candidates can use the HSE resources on the specific hazardous substances listed in learning outcome 2.2 to supplement their knowledge and understanding. For silica INDG 463 provides helpful information.

This question was selected by two thirds of all candidates and the average mark achieved was under half marks.

Question 10 An organisation uses a local exhaust ventilation (LEV) system to control workers' exposure to dust generated by a work process.

A thorough examination and test of the LEV system's performance is carried out on a regular basis.

- (a) **Explain** the purpose of this thorough examination and test. (4)
- (b) Transport (duct) velocity is one of the measurements carried out to assess the performance of the LEV system.
 - (i) **Outline** why transport (duct) velocity is an important parameter to measure when assessing the performance of the LEV system. (2)
 - (ii) **Describe** the equipment and methods that can be used to measure transport velocity in the LEV system. (6)
- (c) Fabric filters are a type of air cleaning device that may be found in the LEV systems used to control dust.
 - (i) **Explain** how fabric filters operate to remove or reduce dust in the exhaust air. (3)
 - (ii) **Outline** a range of visual checks and measurements of performance that could be carried out on this air cleaning device as part of the thorough examination and test. (5)

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

When explaining the purpose of the thorough examination and test of the LEV system most candidates limited their answer to the legal requirement under the COSHH regulations. For the 4 marks available it was necessary to include a wider range of points such as, to confirm the LEV is working to its design specification and to confirm if it is providing adequate control of exposure.

In part (b) most candidates omitted to mention the importance of making the transport velocity measurements in an area of the duct free from turbulence, such as on a long straight stretch.

Knowledge and understanding of air cleaning devices was limited especially in respect of the type referred to in this question, fabric filters. Course providers and candidates are reminded that the HSE document HSG258 listed in the references for Unit B syllabus is critical when studying this part of the National Diploma. This document clearly explains, with the aid of diagrams, the various types and operation of air cleaning devices, as well as other parts of an LEV system.

When answering part (c) (ii) candidates often provided a limited range of checks and measurements that could be carried out. Most mentioned the need to inspect the fabric filter to look for physical damage. Few candidates referred to the checking of the shake down mechanisms or blockage alarms. When making measurements on the air-cleaning device then the pressure drop or pressure change across the device is critical and few candidates seemed to understand this. Although a few candidates did outline clearly how this could be measured and gained marks for this.

This question was almost as popular as questions 8 and 9, but the average mark achieved was well below half marks suggesting that many candidates had difficulty when answering it.

Question 11	(a)	Outline benefits for employers and employees of carrying out health surveillance.	(5)
	(b)	Regulation 11 of the Control of Substances Hazardous to Health Regulations 2002 (COSHH) indicates that health surveillance is appropriate in certain circumstances. Outline these circumstances.	(4)
	(c)	Outline the requirements for keeping health surveillance records in accordance with the COSHH regulations.	(5)
	(d)	Identify information that should be contained in a health surveillance record.	(4)
	(e)	<i>Other than</i> COSHH, identify TWO pieces of legislation that require health surveillance AND , for EACH piece of legislation, identify the type of health surveillance that could be appropriate.	(2)

This question assessed candidates' knowledge and understanding of learning outcomes 1.3: Outline the management of occupational health (including the practical and legal aspects); 2.3: Outline the factors to consider when undertaking assessment and evaluation of risks from hazardous substances; 4.3: Outline the principles of biological monitoring; 6.2: Explain the effects of noise on the individual and the use of audiometry; and 6.7: Explain the measurement and assessment of vibration exposure. In the 2010 specification the learning outcome is 11.3: Outline the management of occupational health (including the practical and legal aspects).

Answers to part (a) were often limited with candidates missing key benefits such as confirming an employee is still fit to do their job. Another benefit of health surveillance is that it provides an opportunity to give advice or training to employees about safe and healthy working.

Many candidates had no difficulty in answering part (b) of this question. Most candidates included the specific requirements to carry out health surveillance if a substance listed in Schedule 6 of COSHH is in use.

Candidates were able to provide good answers to parts (c) and (d). Part (c) required some technical knowledge contained in the COSHH regulations, for example the need to keep such records for 40 years. The need to maintain confidentiality was mentioned frequently by many candidates. Only a small number of candidates knew that if a business ceases trading then the health surveillance records should be passed to the HSE.

It was possible to gain good marks in part (d) by applying a common sense approach. Although a point often missed was the need for the health surveillance record to include the decision of the occupational health professional.

In order to achieve the marks available in part (e) candidates needed to identify **both** the type of health surveillance **and** the relevant legislation that gives rise to this requirement. If one half of this response was omitted then a mark was not awarded.

This was the most popular question in Section B and the average mark achieved was just 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: <https://www.ielts.org/about-the-test/test-format>

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

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 purpose of a thorough examination and test of a local exhaust ventilation system' for 4 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.

Describe

Describe: To give a detailed written account of the distinctive features of a subject. 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 subject 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.

APPENDIX



Noise exposure ready-reckoner (Daily exposure)

Sound pressure level, L_{Aeq} (dB)	Duration of exposure (hours)								Total exposure points	Noise exposure $L_{EP,d}$ (dB)
	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	10	12		
105	320	625	1250							
104	250	500	1000							
103	200	400	800							
102	160	320	630	1250						
101	125	250	500	1000						
100	100	200	400	800					3200	100
99	80	160	320	630	1250				2500	99
98	65	125	250	500	1000				2000	98
97	50	100	200	400	800				1600	97
96	40	80	160	320	630	1250			1250	96
95	32	65	125	250	500	1000			1000	95
94	25	50	100	200	400	800			800	94
93	20	40	80	160	320	630			630	93
92	16	32	65	125	250	500	625		500	92
91	12	25	50	100	200	400	500	600	400	91
90	10	20	40	80	160	320	400	470	320	90
89	8	16	32	65	130	250	310	380	250	89
88	6	12	25	50	100	200	250	300	200	88
87	5	10	20	40	80	160	200	240	160	87
86	4	8	16	32	65	130	160	190	130	86
85		6	12	25	50	100	125	150	100	85
84		5	10	20	40	80	100	120	80	84
83		4	8	16	32	65	80	95	65	83
82			6	12	25	50	65	75	50	82
81			5	10	20	40	50	60	40	81
80			4	8	16	32	40	48	32	80
79				6	13	25	32	38	25	79
78				5	10	20	25	30	20	78
77					8	16	20	24	16	77
76					6	13	16	20		
75					5	10	13	15		