Example question paper and Examiners' feedback on expected answers (GC2)

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UNIT GC2: CONTROLLING WORKPLACE HAZARDS

For: **NEBOSH National General Certificate in Occupational Health and Safety**
NEBOSH International General Certificate in Occupational Health and Safety

CONTENTS

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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 exams taken in over 120 countries around the world. Our qualifications are recognised by the relevant professional membership bodies including the Institution of Occupational Safety and Health (IOSH) and the International Institute of Risk and Safety Management (IIRSM).

NEBOSH is an awarding body that applies best practice setting, assessment and marking and applies to Scottish Qualifications Authority (SQA) regulatory requirements.

This report provides guidance for candidates which it is hoped will be useful to candidates and tutors in preparation for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content and the application of assessment criteria.

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General comments

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 always some 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.

Course providers and candidates will benefit from use of the "Guide to the NEBOSH National General Certificate 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 GC2 and tutor reference documents for each Element.

Some candidates may over rely on knowledge of health and safety gained through their own work experience. While practical experiences can sometimes be helpful they are not a substitute for tuition and study of the syllabus content, to the breadth and depth indicated in the Guide referred to above.

In order to meet the pass standard for this assessment, acquisition of knowledge and understanding across the syllabus are prerequisites. However, candidates need to demonstrate their knowledge and understanding in answering the questions set. Referral of candidates in this unit is invariably because they are unable to write a full, well-informed answer to one or more of the questions asked.

Some candidates find it difficult to relate their learning to the questions and as a result offer responses reliant on recalled knowledge and conjecture and fail to demonstrate a sufficient degree of understanding. Candidates should prepare themselves for this vocational examination by ensuring their understanding, not rote-learning pre-prepared answers.

Candidates should therefore note this Report has not been written to provide 'sample answers' but to give examples of what Examiners are expecting and more specifically to highlight areas of underperformance.

Common weaknesses and suggestions to assist providers and candidates

It is recognised that many candidates are well prepared for their assessments. However, recurrent issues, as outlined below, continue to prevent some candidates reaching their full potential in the assessment.

Weakness in examination technique

- Many candidates fail to apply the basic principles of examination technique and for some candidates this means the difference between a pass and a referral.
- Candidates need to plan their time effectively. Some candidates fail to make good use of their time and give excessive detail in some answers leaving insufficient time to address all of the questions.
- In some instances, candidates do not attempt all the required questions or are failing to provide complete answers. Candidates are advised to always attempt an answer to a question even when the question is on an unfamiliar topic. At the risk of stating the obvious, an unattempted question will gain no marks. Questions or parts of questions missed can also indicate a weakness in time management.
- Some candidates fail to answer the question set and instead provide information that may be relevant to the topic but is irrelevant to the question and cannot therefore be awarded marks.

- Some candidates fail to separate their answers into the different sub-sections of the questions. These candidates could gain marks for the different sections if they clearly indicated which part of the question they were answering (by using the numbering from the question in their answer, for example). Structuring their answers to address the different parts of the question can also help in logically drawing out the points to be made in response.

Candidates benefit from the chance to practice answering questions in examination like conditions. This should assist them to become familiar with the need to read questions carefully, consider, plan their answer and then begin to write. By examination like conditions, practicing their answers within appropriate time limits should help candidates with time management within the examination.

Feedback to candidates on their answers to questions is a key part of these practice activities.

Lack of attention to command word

- Many candidates fail to apply the command words (eg describe, outline, etc). Command words are the instructions that guide the candidate on the depth of answer required. If, for instance, a question asks the candidate to 'describe' something, then few marks will be awarded to an answer that is an outline. Similarly, the command word 'outline' requires more information than a list.
- The most common weakness is the provision of too little content in an answer to meet the requirement of the command word. This is an unfortunate error as it can mean that a candidate, who knows the topic, and correct points to include in their answer, misses out on marks.

There is good guidance available to candidates and providers "Guidance on command words and question papers" which can be accessed on the NEBOSH website. This guidance will assist candidates to see and understand what is required in an answer when the different command words are used in questions. Some candidates miss out on marks by spending too long writing about one or two points when the answer requires more points to be covered. The chance to practice questions with a range of command words and to receive feedback on the quality of their answers will benefit candidates.

Failing to read the question/memorising answers

- Some candidates appear to have answered a question they hoped to see in the question paper rather than the question actually asked. This error can lead to all the available marks for a question being missed which can significantly impact on the likelihood of achieving the pass standard.

Other weaknesses observed

- Candidates should be aware of the need to make their handwriting as legible as possible.
- Candidates should note that it is not necessary to start a new page in their answer booklet for each section of a question.
- Candidates do not need to write the question out before answering it, they just need to indicate in the top right hand corner of the page which question is being answered. In some cases valuable time is lost doing this rather than focusing on the answer needed.

Unit GC2
Controlling workplace hazards

Question 1 *Airborne measurements have identified that a local exhaust ventilation system (LEV) is no longer adequately controlling worker exposure to airborne dust. A risk assessment has identified that respiratory protective equipment (RPE) can be used as an interim measure to protect workers while engineers repair the LEV system.*

(a) ***Identify*** *the main components of the LEV system.* ***(4)***

(b) ***Outlin****e factors that may have reduced the effectiveness of the LEV system.* ***(8)***

(c) ***Outline*** *factors that should be considered when selecting the RPE to protect the workers while engineers are working on the LEV system.* ***(8)***

In part (a), an identification of the main components of LEV systems was required and to gain the 4 marks available at least four components of an LEV system was required. This part of the question posed little difficulty to the majority of candidates who could make reference to the hood, ducting, air mover, filter and outlet. Some candidates did provide a sketch of a LEV system which was not required, and while this would not compromise the ability to gain marks, the provision of a sketch may have wasted valuable examination time. Additionally, nothing more than the identification of the components of an LEV system was required to gain the marks available and therefore the few candidates who gave details of these parts did not use their examination time effectively.

In part (b), candidates were expected to outline the factors that may have reduced the effectiveness of the LEV system. Deficiencies with any of the components parts of the LEV system could have resulted in the LEV no longer controlling worker exposure to airborne dust, and candidates who identified these components in part (a) had already indicated breadth of knowledge and were well positioned to provide sufficient outlines. General issues such as poor design of the systems and the LEV not being used and specific deficiencies, including blockages of ducting, filters and outlets, together with reference to damaged or inefficient fans would have gained the marks available.

The scenario referred to the need for respiratory protective equipment to be used during the period that the LEV was unavailable, therefore part (c) of the question asked for an outline of the factors that should be considered when selecting the RPE. Many candidates correctly referred the need to comply with appropriate standards, the correct fitting of respirators and that facial hair and personal items, such as spectacles, may compromise the effectiveness of the equipment. However, only a few candidates demonstrated technical knowledge of this subject by including reference in their answers to the required protection factor of the RPE, the airborne quantity of dust with reference to the occupational exposure limit, or whether a filtering face-piece would be suitable, or that a cartridge respirator would be required. Outlines, in general were sufficient, with only the minority of candidates restricting their marks by limiting answers to one or two words.

Question 2

(a) ***Identify*** *health risks associated with exposure to wood dust.* ***(2)***

(b) ***Outline*** *control measures to reduce the health risks from exposure to wood dust.* ***(6)***

Wood dust is an established cause of occupational ill-health and part (a) of this question asked candidates to identify the health risks associated with exposure to this chemical agent. Although wood dust can affect the respiratory system and is carcinogenic, candidates who gave general answers such as 'breathing difficulties' or 'cancer' would not have been sufficiently specific in order to be awarded marks. Candidates who could identify particular health risks arising out of exposure to wood dust, which could include asthma, nasal cancer and rhinitis, did gain the marks available, although such answers were provided by a minority of candidates.

Candidates were clearly more comfortable with part (b) of this question and a significant number of candidates were able to outline a number of control measures that would reduce the risk from exposure to wood dust. Although in part (a) knowledge of wood dust was essential to gain the marks, this was not the case in part (b) as knowledge of general dust controls would have been adequate. Most candidates could refer to the provision of local exhaust ventilation systems, the wearing of respiratory protective equipment and keeping the generation of dust to a minimum. Other marks were available where suitable outlines of further controls were provided, such as workplace sampling, health surveillance and the availability of welfare facilities. However, very few candidates were able to make reference to such precautions that indicated a lack of breadth in knowledge or examination preparation.

Question 3

Identify *items that should be inspected on a mobile tower scaffold prior to use.* ***(8)***

Mobile tower scaffolds are a very common item of work equipment that is used for access requirements and maintenance activities. In order to ensure that a mobile tower scaffold is free from defect, an inspection should be undertaken prior to use. This question required candidates to identify the items on a mobile tower scaffold that should be subject to such an inspection. Any of the components of a mobile tower scaffold should be in a good condition and free from defect, therefore candidates who could identify the components of a mobile tower scaffold would be well positioned to perform well on this question. Marks could be gained for identifying structural components such as bracing and outriggers, fall prevention items such as guard rails and platforms, and access features including ladders and access doors. Some candidates confused mobile tower scaffolds with independent tied scaffolds, or confused mobile tower scaffolds with mobile elevated platforms and provided their answer accordingly. Although reference to some of the features common to all access platforms may have gained marks, providing an answer for an item of work equipment, other than that in the question, would not gain all of the marks available. This may be as a result of not reading the question correctly or as a result of question spotting, whereby a candidate is prepared for a similar question, but not the question that is set.

Question 4 ***Outline*** *how the following two protective measures reduce the risk of electric shock* ***AND****, in* ***EACH*** *case,* ***give*** *an example of its application:*

(a) reduced low voltage; ***(4)***

(b) double insulation. ***(4)***

Questions relating to electrical safety regularly attract very poor answers with only a few candidates indicating any knowledge of this subject at all. Although candidates appear prepared to provide a broad range of electrical control measures as answers to electrical questions, specific knowledge of each of these control measures remains limited. Therefore this question, that required knowledge of how reduced low voltage and double insulation reduce the risk of electric shock, received very few adequate answers.

In part (a) marks were available for answers that gave a reasonable outline of the two main reduced low voltage electrical systems. 110v tools can be used in association with a step down transformer that is centre tapped to earth. In the event of a fault, due to the earth configuration, any shock is limited to 55v that should not incur serious injury. A further application of reduced low voltage and extra low voltage that involves voltages less than 50v supplied from a safety source that would cause little harm under fault conditions. An example would be portable electric hand tools. Candidates who referred to the use of battery tools would not have been awarded any marks.

In part (b) of the question the subject was how double insulation would reduce the risk of electric shock. Many candidates think of double insulation as the covering on cables and use this as an example of their answer which indicates little knowledge of electrical safety. The few candidates who were prepared for this element of the syllabus could provide in their answer reference to internal live parts of electrical equipment having two layers of insulation, which in the event of a fault would prevent the fault being able to make any exposed part to become live. Examples include Class II equipment that would be used for items such as portable appliances and hand tools.

Question 5 ***Outline*** *factors that should be considered so that persons with sensory impairments and/or physical disabilities can safely evacuate a workplace in the event of a fire.* ***(8)***

This question includes reference to ‘sensory impairments’ in order to signpost to candidates that when considering disability in relation to fire precautions this should include persons with hearing difficulties and the visually impaired, in addition to those with mobility difficulties. Candidates seemed to be more familiar with the mobility aspects of disability and included in their answers reference to evacuation chairs, buddy systems, siting employees on ground floors and the provision of safety havens and refuges where immediate evacuation would not be possible, all of which would have gained marks where outlines were sufficient. It is worth a reminder at this point that an outline requires the candidate to indicate the principle features of each of the subjects of their answer. Therefore, ‘evacuation chair’ on its own would not gain the marks available. What would be required in this example is reference to a mobile device that would enable a person with mobility problems to be carried or assisted in the escape of a building, typically being used on stairs.

A reasonable number of candidates referred to the need for visual alarms, such as flashing lights to assist those with hearing difficulties, but very few candidates were aware of additional factors to assist those with sensory impairments, such as personal vibration alarms, again suited to persons with hearing impairments, and tactile surfaces along escape routes to assist the visually impaired.

Question 6 ***Identify*** *possible hazards that could cause workers to be injured when walking through an external storage area of a workplace.* ***(2)***

This question posed few problems to candidates with above-average marks being awarded for the majority of answers. The command word was limited to 'identify' that should have indicated that a brief reference to each hazard would be sufficient to gain the marks available. Additionally, it is suggested that candidates would have had practical experience of the hazards that a person would face while on foot within a workplace which, in addition to course tuition and course materials, would have assisted in providing their answer. Pedestrians would be presented with a wide range of hazards in a storage area and consideration could be given to hazards associated with both moving vehicles and loading of vehicles, stacked materials, ground surface, obstructions, visibility and weather conditions. Although marks would not be lost, some candidates felt it necessary to give more information that would be required for an 'identify' question and would have used valuable time in providing unnecessary information.

Question 7

(a) *With reference to mechanical hazards of machinery,* ***describe*** *how harm may arise from:*

(i) *entanglement;* ***(1)***

(ii) *shearing;* ***(1)***

(iii) *drawing in;* ***(1)***

(iv) *crushing.* ***(1)***

(b) ***Identify*** *non-mechanical hazards associated with the use of machinery.* ***(4)***

Part (a) of this question required a description of how each of the stated mechanical hazards of machinery could cause harm. To gain each mark available, the candidate would be expected to provide an account of each hazard with sufficient detail such that another person would be able to visualise what was being described.

Entanglement would normally involve a rotating part such as a shaft or chuck of a drill which if approached by a person could catch loose clothing, hair or jewellery. A shearing hazard exists when a moving part of a machine moves in very close proximity to a stationary part, or where two moving parts move and pass each other in close proximity, causing a scissor or guillotine-type action. A body part could be caught between these two components. Drawing in can occur when there are counter rotating parts such as rollers, or where a pulley belt rides over a pulley, or where a chain is in contact with a sprocket. A finger or limb could be caught where these two parts meet and be drawn in and trapped. A crushing hazard is where a person or limb is located between a moving part of a machine and a fixed object, or between two moving parts of machinery that have a sufficient surface area to apply a compressive force. Candidates are usually prepared to identify a number of mechanical hazards, but are less able to give any detail or description of what the hazards are or how harm may arise.

Part (b) was limited to an identification of non-mechanical hazards which troubled few candidates and short answers such as noise, vibration, electrical, thermal and radiation, among others, were sufficient to gain the marks. Some candidates continue to confuse mechanical and non-mechanical hazards and would limit their ability to gain marks as a result.

Question 8 ***Identify*** *rules that should be followed by a driver when leaving a forklift truck unattended during a work break.* ***(8)***

Answers to this question included a number of rules that would apply when leaving any type of vehicle unattended in a workplace which, along with personal experience, resulted in a significant number of candidates identifying rules, such as parking in a designated area, not blocking exits, not parking on a slope, applying the handbrake, removing keys and securing the vehicle, all of which would have gained marks. However, this question related to a forklift truck and therefore marks were available for issues relating specifically to a forklift truck when left unattended. Only a few candidates were able to identify specific rules relating to a forklift that would require the driver to lower the forks of the truck, rest the forks on the ground, tilt the mast forwards and ensure that forks are not across pedestrian routes.

Question 9 *A dental surgery has installed an X-ray facility.*

(a) ***Identify*** *the health effects associated with exposure to X-ray radiation.* ***(4)***

(b) ***Outline*** *control measures that could be taken in order to help reduce the risks to the operator from exposure to X-ray radiation.* ***(4)***

Candidates who recognised that X-ray radiation is a type of ionising radiation were well prepared for this question and in part (a) could identify health effects such as sickness, loss of hair, increased risk of cancer, sterility and birth defects. Some candidates continue to confuse ionising and non-ionising radiation which was reflected in the marks that could be awarded to their responses.

In part (b) candidates who applied the principal of ‘time, distance and shielding’ could provide a sufficient breadth of answer, which with sufficient depth required by the command word, ‘outline’ gained the marks available. ‘Time, distance and shielding’ would not be sufficient as an answer on its own, but this would guide the candidate to provide adequate outlines covering, enclosure of the X-ray source with suitable material, using barriers or screens between the source and workers, reducing the time of exposure and using appropriate personal protective equipment, such as aprons. Again, candidates who confused ionising radiation with non-ionising radiation would have compromised their ability to gain marks.

Question 10 *To reduce the risk of musculoskeletal disorders and back injuries, postal workers have been provided with manually operated trolleys to carry post during their delivery rounds.*

Outline** factors that would need to be considered when carrying out a manual handling assessment of the use of the trolley.* ***(8)

Although in this question the postal workers have been provided with trolleys in order to reduce the risks from carrying post during delivery rounds, manual handling will still be required to push and manoeuvre the trolley, hence the need for a manual handling assessment to be undertaken.

Many candidates were able to apply the TILE mnemonic that is widely taught by course providers and is included in many available publications and guidance materials. Such an approach enabled candidates to arrange their answers into factors associated with the task, load, individual and working environment that ensured that the breadth of answer was covered. Marks were available where sufficient outlines included factors such as distance the trolley has to be pushed, duration of activity, the fitness and training of the postal worker, the weight of the trolley and its mechanical condition.

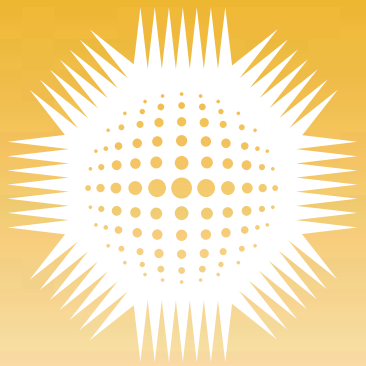
Question 11

(a) ***Outline** control measures that could be used to reduce the exposure of construction workers to high levels of noise from cement mixers.* ***(4)***

(b) ***Identify** other noise hazards that may be present on construction site.* ***(4)***

In part (a) candidates were required to provide an outline of measures to reduce the exposure of workers from noise produced by cement mixers. Candidates who could apply the principles of reduction of noise at source, interfering with the transmission path of noise and protection of the noise receiver were well positioned to be awarded the marks available. Outlines of noise reduction at source could include purchasing ready mixed cement and using cement mixers with lower noise emissions, controls that interfered with the transmission paths of noise could include using acoustic screens around cement mixers and siting the mixer on solid ground. Protection of the receiver could include reduction of the time exposed and the provision of hearing protection. The majority of candidates referred to quieter cement mixers and the provision of hearing protection and gained marks accordingly. However, only a few candidates could demonstrate understanding of techniques to minimise the transmission of noise.

Part (b) of this question provided few problems, with most candidates being able to identify noise sources on a construction site. Reference to powered hand tools, vehicles, heavy plant, demolition activities and power generation equipment among others, would have gained marks.



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