Examiners' Report

NEBOSH INTERNATIONAL DIPLOMA IN OCCUPATIONAL HEALTH AND SAFETY

UNIT IC: INTERNATIONAL WORKPLACE AND WORK EQUIPMENT SAFETY

JANUARY 2020

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 learners annually and are offered by over 600 Learning Partners, 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 learners and Learning Partners 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 learners 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 learners, 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 2020.

Feedback is presented in these key areas: responses to questions, examination technique and command words and is designed to assist learners and Learning Partners prepare for future assessments in this unit.

Learners and Learning Partners will also benefit from use of the 'Guide to the NEBOSH International Diploma in Occupational Health and Safety' which is available via the NEBOSH website. In particular, the guide sets out in detail the syllabus content for Unit IC 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.

Unit IC
International workplace and work equipment safety

Question 1

(a) **Outline** what might cause an agricultural tractor to overturn. **(6)**

(b) **Outline** control measures that could help reduce the risk of an agricultural tractor overturning. **(4)**

This question assessed learners' knowledge and understanding of learning outcome 7.1: Outline the main hazards and control measures associated with mobile work equipment.

Learning outcome 7.1 covers the identification of the hazards and control measures associated with different types of mobile work equipment, and specifically, agricultural tractors and works vehicles.

Part (a) was answered well, but learners appeared to find part (b) more challenging.

Most learners were able to outline the ways in which agricultural tractors might overturn. However, very few specifically mentioned longitudinal and lateral stability, which would have enabled learners to give a more structured answer. Two common errors were listing control measures in part (a) and for which there were no marks available, and answering the question out of context by referring to forklift trucks. While there are common stability and control measures with these two vehicles, the environment and method of operation are different. Most notably, the off-road element of agricultural tractors varies greatly from that of most forklift truck operations.

Question 2

An organisation can help ensure workplace transport safety by having safe vehicles and a safe site.

(a) **Outline** control measures that should be considered to help ensure safe *vehicles*. **(5)**

(b) **Outline** control measures that should be considered to help ensure a safe *site*. **(5)**

This question assessed learners' knowledge and understanding of learning outcome 10.1: Outline the factors to be considered in a workplace transport risk assessment and the controls available for managing workplace transport risk.

An underlying principle of workplace transport safety is that there are three essential constituent elements: safe vehicles, safe sites and safe drivers. This question concerned the first two and most learners provided competent responses.

In part (a) the control measures for safe vehicles in the workplace included conspicuous colour and to reduce blind spots, etc. Many learners had difficulty focusing on the vehicle, deviating onto site and driver issues, or giving too much detail on maintenance.

Control measures for a safe site in part (b) could have included stable roadways and segregation of pedestrians, etc.

The question did not stipulate a specific workplace environment, so learners were free to draw on their own knowledge and experience in their answer. Workplace transport is a popular and accessible topic for the majority of learners. However, some learners gave lists rather than outlining their answers, limiting the marks that could be awarded. Also, providing answers to part (b) in part (a) did not gain any marks, or vice-versa.

Some learners included matters concerning 'safe drivers'. While correct, these did not gain any marks because they were not asked for in the question. This reinforces, once again, the requirement to read and re-read the question carefully.

Question 3 An excavation is required of an existing factory floor to repair a damaged water main.

(a) **Outline** hazards and corresponding risks that may be created by the excavation work. **(5)**

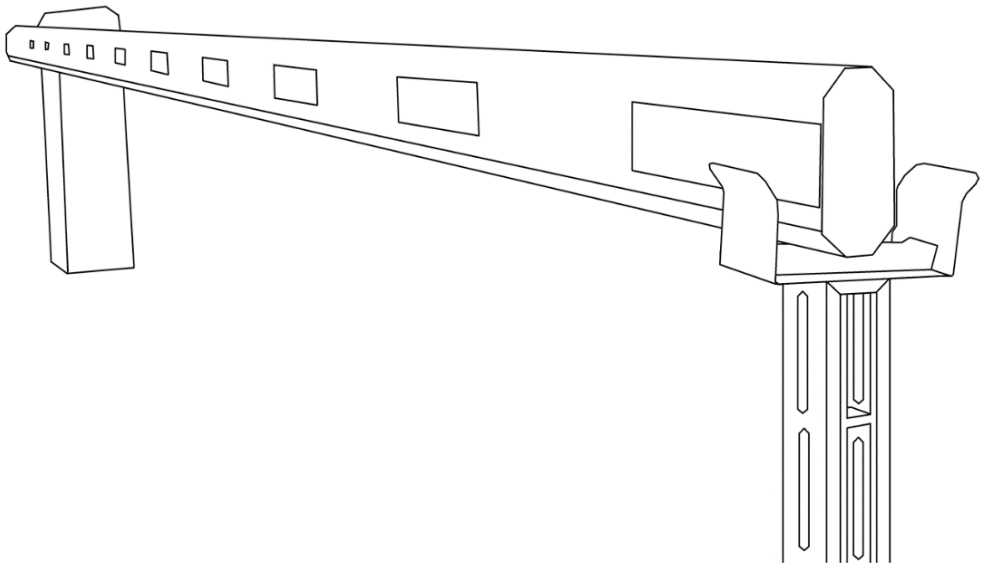
(b) **Outline** control measures that should be considered to help ensure the safety of the work activity. **(5)**

This question assessed learners' knowledge and understanding of learning outcome 9.6: Explain the hazards and control measures associated with excavation work.

Part (a) required learners to outline the hazards along with the corresponding risks. The phrasing made it clear that learners had to make a link between the two to be awarded the mark. For example, an influx of water into the excavation could lead to drowning of workers. Most learners were able to identify the relevant hazards but few provided the required link between the hazard and the risks.

Part (b) required learners to outline suitable control measures to ensure *safety of the work activity*. However, it appeared that some learners did not fully read the question and limited their answers to only referring to preventing trench collapses. An overlooked answer, that would have gained marks, was the role of statutory inspections.

Question 4 Car park entry and exit is controlled by an automatic barrier of the rising arm type shown below.



The barrier has a control system with sensors, actuators and electronic controllers. Maintenance is occasionally required due to vehicle impact or storm damage.

(a) **Outline** *mechanical* hazards associated with automatic rising arm barriers. **(4)**

(b) **Outline** control measures that should be considered to help reduce risk before starting any maintenance activity on the barrier. **(6)**

This question assessed learners' knowledge and understanding of learning outcomes 6.2: Outline the principal generic mechanical and non-mechanical hazards of general workplace machinery; and 6.4: Explain the principles of control associated with the maintenance of general workplace machinery.

Learners and learning partners need to note that the syllabus specifically refers to 'doors and gates' in relation to general workplace machinery. To assist learners, a sketch was provided.

Part (a) asked for an outline of the *mechanical* hazards associated with automatic rising arm barriers. However, many learners provided only a list of non-mechanical as well as mechanical hazards, limiting their marks.

In part (b) some learners did not focus on the maintenance aspects of the question, preferring to consider control measures while the barrier was in normal operation.

Release of stored energy was outlined by most learners. Few learners considered protecting workers from moving traffic.

Question 5 An electrical installation on a dairy farm needs replacing.

(a) **Outline** what may have caused the deterioration of the existing electrical installation. **(5)**

(b) **Outline** what should be considered when designing the replacement electrical installation to help avoid future deterioration. **(5)**

This question assessed learners' knowledge and understanding of learning outcomes 4.3: Outline the main principles of the design and use of electrical systems and equipment in adverse or hazardous environments; and 8.3: Outline the issues relevant to the installation, use, inspection and maintenance of electrical systems.

Many learners did not recognise that the electrical installation was on a dairy farm and therefore did not consider causes of deterioration specific to a farm.

In part (a) very few learners mentioned chemical deterioration or corrosion of housings. Marks were also available for damage caused by wet weather.

Learners found part (b) more challenging when considering the design features of a replacement installation. Few learners mentioned electrical designs with suitable supply and distribution with appropriate conductors, junction boxes and connections. Learners needed to refer to design features such as suitable pumps, agitators, heaters, coolers and milking equipment.

In both parts, maximum marks were gained by those learners who answered the question with examples specific to the scenario, rather than giving generic points.

Question 6 **Outline** what should be considered when developing a planned maintenance programme for workplace machinery. **(10)**

This question assessed learners' knowledge and understanding of learning outcome 5.3: Explain safe working procedures for the maintenance, inspection and testing of work equipment according to the risks posed.

This subject area was not understood by most learners. The syllabus specifically refers to three types of maintenance: planned preventative, condition-based and breakdown. An outline of the requirements for a planned preventative maintenance programme could have included such factors as an inventory of the safety-critical machinery within the scope of the programme and the statutory requirements for its maintenance.

Most learners correctly referred to manufacturers' recommendations and the competence of maintenance staff.

A small number of learners mis-read the requirement for planning the programme and discussed how to carry out maintenance.

Question 7 A mobile crane is to be used to erect a new telecommunications aerial on the roof of a three-storey office building.

Outline precautions that should be taken to help reduce risks to anyone at ground level who may be affected by the operation. **(20)**

This question assessed learners' knowledge and understanding of learning outcome 7.2: Outline the main hazards and control measures associated with lifting equipment.

Many learners were able to visualise the situation in this question and talked about the crane, the surrounding area and the lift, although they did not go into enough detail on these aspects for an 'outline' question.

Many answers focused on the work at height on top of the building, rather than protecting those at ground level. There was no little mention of liaison with police, road closures, or provision of adequate space with appropriate lighting for the operation.

Learners and Learning Partners need to be mindful that the requirement is not just for the protection of workers but also members of the public.

Question 8 Workers are required to enter a sewer though a vertical shaft. The sewer and shaft are classed as a confined space.

(a) **Give** the meaning of the term *'confined space'*. **(2)**

(b) **Outline** hazards that the workers could be exposed to when working in the sewer. **(10)**

(c) **Outline** what should be considered when developing emergency arrangements that will be provided during this activity. **(8)**

This question assessed learners' knowledge and understanding of learning outcome 1.2: Explain the hazards, risks and control measures associated with work in confined spaces.

This question led learners incrementally through this learning outcome.

Part (a) required a definition for a confined space. Although there are differences in definitions around the globe, all would be mark-worthy. Nearly all learners were able to provide a definition of a confined space, many producing a textbook definition. The command word 'give' was well-understood.

In part (b) most learners outlined a range of hazards around oxygen deficiency, more lighting, slippery surfaces and biological contaminants.

Part (c) was the most challenging part for learners. Some answers discussed the process of routine entry into the space, rather than the emergency arrangements. A majority of learners made some reference to firefighting equipment, raising the alarm and having access to adequate rescue equipment.

Question 9

The final process in the manufacture of office furniture involves spraying it with solvent-based paint, in a custom-designed spray room. The solvent has a flash point of 15°C.

Assuming that a risk assessment has been carried out, **outline** control measures that could help minimise the associated risk of fire and explosion with this spraying activity. **(20)**

This question assessed learners' knowledge and understanding of learning outcome 2.3: Outline the main principles and practices of prevention and protection against fire and explosion.

This was a technical and challenging topic for most learners who only provided general fire precautions relating to firefighting, limiting their marks.

Better answers referred to the full range of controls. For example, selecting a higher flashpoint product or using equipment suitable for a flammable atmosphere. Few answers referred to safe cleaning of spray-painting nozzles.

Question 10

A steam boiler is a type of pressure system used in industry where loss of containment can occur through mechanical failures such as overheating, creep and hydrogen embrittlement.

(a) **Outline** why a steam boiler is classified as a pressure system. **(3)**

(b) **Identify THREE** additional examples of mechanical failure to which a steam boiler is susceptible **AND**, in **EACH** case, **outline** the mechanism of the identified mechanical failure. **(9)**

(c) **Outline** the content of a written scheme of examination form for the boiler. **(8)**

This question assessed learners' knowledge and understanding of learning outcomes 5.5: Outline the maintenance, failure modes and prevention strategies when working with pressure systems; and 5.3: Explain safe working procedures for the maintenance, inspection and testing of work equipment according to the risks posed.

In part (a) a structured answer would have identified that a steam boiler has a boiler drum, relief valves, internal tubes and steam pipework.

Part (b) was a technical question that required learners to deconstruct the sentence into its component parts. Most answers incorrectly specified brittle and ductile failure of metals. Specific answers, relating to steam boilers, should have included corrosion fatigue, thermal fatigue, mechanical fatigue and stress corrosion cracking with associated outlines of the *mechanism* of failure for the nominated mechanical failure.

Part (c) related to written schemes of examination, a subject that appeared to be well-understood by learners in this sitting.

Question 11 An organisation operates a multi-storey care home.

(a) **Outline** what should be considered to help ensure an adequate means of escape in the event of a fire. **(12)**

(b) **Outline** general requirements for fire doors that should be installed in the care home. **(8)**

This question assessed learners' knowledge and understanding of learning outcome 3.4: Outline the factors to be considered in providing and maintaining the means of escape.

Most learners understood what a care home was. However, learners often did not read this question thoroughly enough and in part (a) gave comprehensive but incorrect answers concerning *general fire precautions* in care homes. The key point that needed to be appreciated was that residents might have mobility concerns, sensory, hearing or visual impairments. Once that was acknowledged, the means of adequate means of escape would come into focus.

In part (b) most learners included a couple of the more obvious requirements for fire doors (eg fire resistant and self-closing) but had difficulty with the finer detail that they must fit within the door frame or that the door is set and fitted with an intumescent strip.

There appeared to be limited examination technique rather than a lack of knowledge or understanding of this learning outcome.

Examination technique

The following examination techniques are consistently identified as the main areas in need of improvement for learners:

Learners misread/misinterpreted the question

Careful and thorough preparation for the examination is vital for learners. Learning Partners should assist learners in setting out and applying sound revision and examination practice and preparation techniques to ensure that they are well prepared for the examination. This includes ensuring that learners carefully read the question to determine exactly what is being asked and answer accordingly.

Examiners noted that there was evidence of learners not understanding the question that was asked and therefore providing an answer that was not relevant to the question.

The range of English language skills demonstrated in the examination by learners varies enormously. Examiners often find themselves faced with scripts where learners do not appear to have understood the question and struggle to write a coherent answer in English. Learners for this examination should satisfy the required IELTS Level 7 language requirements. Learning Partners are reminded that it is incumbent on them to provide appropriate advice and guidance to learners to help ensure that they stand a reasonable chance of success in the study of the NEBOSH Diploma.

There were numerous examples of quite long, detailed answers that suggest practical experience but do not focus on the question being asked. This may be a result of learners either not reading the question properly, or because of possible language issues where learners do not understand what the question is asking.

The examination is assessing learners on their understanding of 'managing' health and safety and a number of learners did not seem to grasp this resulting in long, detailed answers on such issues as 'what to look for in an audit' rather than how to prepare for and manage an audit.

Examiners ask questions based on the syllabus. Points, no matter how valid, but unrelated to the question being asked, will not attract any marks. Learners should note that where there is emphasis in a question (eg by the use of italics) it is to guide learners towards a particular point. Reading and re-reading the question encompasses taking due note of this emphasis.

Learners' handwriting was illegible

The examination situation is a stressful time for learners and while the examination is not a test of the English language or handwriting, scripts must be legible for Examiners to mark them fairly. As the examination progresses, learners can become both mentally and physically tired. In an increasingly electronic age, professional people do not have the same need to write text in longhand. However, to pass this examination it is an essential and necessary part of the preparation to rehearse writing questions in full and in the time allocated.

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

Learning Partners need to identify those learners whose handwriting is illegible and provide them with appropriate advice. Examiners cannot award marks for answers that they are unable to read.

Learners unnecessarily wrote the question down

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

Good examination technique is followed where the learner frames the answer in the context of the question, rather than rewriting the whole of the question. As with the other examination technique points above, good examination technique is developed through practice and good preparation.

Learners repeated the same point but in different ways

In some cases learners tended to make the same point more than once, eg training. Once a valid point has been made and the mark awarded Examiners will not be able to award the mark again. Unless otherwise stated, most questions require learners to respond with a wide range of issues to gain high marks. Consequently learners should take care when using terms that contain numerous points that should be made separately.

Learning Partners should brief learners on examination technique by way of understanding what points are mark worthy in an answer and those that are not.

Learners 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 learner.

Generally, there has been an improvement in response to command words, but a number of learners 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 learners 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.

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

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

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

Learners did not allocate enough time to the question

Some learners were unable to give answers of sufficient depth to warrant good marks and sometimes spent more time on questions carrying fewer marks than was warranted by the command word.

Learners need to take note of the fact that answers in Section A are worth 10 marks and those in Section B are worth 20 marks. The Examiners' expectation is that more detailed answers are required in Section B. Some learners spend a disproportionate amount of time in writing long answers to Section A questions at the expense of time spent on the more in-depth answers demanded in Section B. Proper preparation and 'mock' examinations can help to correct this.

Learning Partners should ensure that learners are given adequate opportunity to develop examination skills to ensure that answers are provided to the depth and breadth required.

Structured Answers

It is important for learners to structure their answers as this helps cover all the requirements of the question without losing focus. It is good examination technique to look for the principles or the concepts that underpin the topic and to use those as a basis for delivering a structured answer.

Learners answered by posing a question

Learners need to resist the temptation to present their answers as merely a series of questions. 'Outline' requires learners *'To indicate the principal features or different parts of'* and this is not done through posing questions to the Examiners.

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 learners:

Outline

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

Most learners are familiar with the requirements of 'outline'. However, a number of learners expect that by listing or giving bullet points that will be sufficient. At this level of qualification learners are expected to be able to construct sentences around their answers.

An 'outline' question requires learners to give the main issue and then provide the key features in the context of the question. Where a question that requires learners to '**outline** the issues to be addressed in the development of an audit system' the response should provide adequate context to the issues in order to gain the marks. An answer that merely includes issues such as 'scope, training, commitment, etc' will not gain good marks since while the issues are relevant there is no context to the issues in relation to the question asked.

Learners should provide context to the point being made to demonstrate understanding of the subject.

As required by a Diploma level qualification learners should be able to demonstrate a detailed understanding of the subject matter and therefore be able to summarise and contextualise technical points in the field of health and safety. Those learners who did provide good outlines to questions demonstrated understanding of the topic without going into too much detail.

If asked to '**outline** the purpose of local exhaust ventilation' in a given scenario, an answer such as 'contaminant removal, exposure limits' would be insufficient as this represents a listed answer. However, removal of contaminant at source (as far as possible) and ensuring exposure limits are not exceeded would higher gain marks.

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

Explain

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

Many learners are still not properly prepared for this command word. A list of points (no matter how relevant) will not satisfy Examiners when the command word is 'explain'. So for example, where learners were asked to explain the circumstances where heat and smoke detectors would be inappropriate, Examiners were looking for learners to explain that heat detectors would be inappropriate in environments where temperatures fluctuate suddenly during normal work activities. Just saying 'workshops', for example, is not enough to provide an answer to an 'explain' question.

Commonly, learners do not provide adequate detail in relation to this command word, eg '**explain** limitations of relying on accident numbers only as a measure of health and safety performance'. An appropriate response would provide the reader with reasons why relying solely on accident numbers would not provide a comprehensive view of the organisational performance in health and safety, eg accident numbers do not indicate incidence of ill-health and accident data may go up following initiatives following underreporting, etc.

Learners are generally unable to provide clear answers where this command word is used but that may be due to lack of knowledge rather than not understanding what is required, since an explanation requires the learner to provide reasoning for their answer. For example, when a question specifies 'explain' the learner is required to provide an understanding or make clear an idea or relationship. For example '**explain** how malaria is transmitted to humans'. If a learner responded with *mosquito bites humans* this would be insufficient to merit full marks as this does not provide a deep enough understanding or relationship from the specified command word or the context in which the question is asked. However, a learner would get full marks if they elaborated on this stating that the disease originates with the plasmodium parasite that is then transmitted to humans via a bite from a feeding female mosquito that carries it; the parasite then transferring to the human blood stream, travelling to the liver.

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.'

Learners are required to provide a word picture in response to this command word and therefore the learner needs to have a good understanding of the subject of the question in the examination in order to gain good marks. Typically, a limited response to this command word will be an inadequate amount of detail in the answer.

For example, when asked to describe the contents of a safety policy learners should provide the Examiner with relevant information about the contents of the policy, eg 'the policy should contain details of the organisational commitment to health and safety'. This would be supported with specific targets and commitment resource to ensuring compliance as a minimum but developing the health and wellbeing of the employees, etc'. An answer that goes no further than listing the subjects of to be covered in the policy would not attract good marks in the examination.

In the examination, lists and single word answers will rarely satisfy the requirement of the Examiners in terms of answering the question at this level. It is noticeable that the well prepared learner has less trouble deciphering command words and tends to gain good marks whereas those learners who use single word answers will tend not to have the knowledge to write anything further in the context that is required.

Give

Give: Only a short answer is required, not an explanation or a description.

'Give' is normally used in conjunction with a further requirement, such as '**give** the meaning of' or '**give** an example in **EACH** case'.

In some circumstances learners may spend too much time giving unrequired detail in response to this command word. It is often used in conjunction with the meaning of a phrase or statement and learners can over-elaborate the required answer. Time management is important in the examination and learners should ensure that they respond with appropriate brevity where the command word and available marks suggest that is all that is required.

When asked to '**give** the meaning of motivation', it would appropriate to say that 'motivation is the driving force that leads an individual to behave in a certain way'. It would not be appropriate to discuss in detail different motivational theories.

On the whole most learners respond well to this command word, often by offering a definition. There is evidence where learners go into too much detail that left those learners writing large amounts of text for very few marks.

Identify

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

As with 'give' above it is not uncommon for learners to over-elaborate their answers in response to this command word. It is adequate for a learner to provide the key point to the Examiner without further developing the point with supporting theory or examples unless they are specifically asked for.

When providing a response to 'identify' the mental selection and naming of an answer that relates to the question should be sufficient. In most cases, one or two words would be sufficient to be awarded corresponding marks. Any further detail would not be required and impacts negatively on the time limit for completing the examination. For example, if the question was '**identify** possible effects on the body when someone is exposed to lead' suitable responses would include developmental effects in unborn babies, anaemia, nausea/vomiting in order to be awarded a mark.

For additional guidance, please see NEBOSH's *'Guidance on command words used in learning outcomes and question papers'* document, which is available on our website: https://www.nebosh.org.uk/i-am/a-learner/ - from this page the document can be found by clicking on the relevant Qualification link, then on the 'Resources' tab.