**Unit 1 Extended response questions worksheet 1 - Exercise 2**

| NCFE Level 1/2 Technical Award in Engineering: Unit 1 |
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| Question |
| You work as an Oil and Gas Chemical Engineer for a petroleum Engineering Company. Your job involves in the process of extracting oil and natural gas from reservoirs.  As part of your role, you must follow safety procedures and meeting standards, which includes adhering to the COSHH regulations.  Discuss the importance of COSHH in a chemical engineering environment and analyse the possible impact of not adhering to the COSHH regulations.  **[9 marks]** |
| Band 3 higher learner response (7-9 MARKS) |
| COSHH (Control of substances hazardous to health) are regulations which regulate substances which can harm people, such as chemicals or gases. It provides easy-to-recognise symbols which means people can immediately know the dangers of the substance they are working with. Symbols include flammable and explosive, indicating to the worker that it may not come into contact with any fire, as it could explode or set alight.  In a chemical engineering role, workers will come into contact with hundreds of different substances which could be hazardous - COSHH makes it easy to know what they should and shouldn't do with them. With COSHH, the employees would be able to recognise the danger of oil and gas and take the precautions needed.  One danger of not adhering to the regulation could be that the workplace is damaged from an explosion or from a corrosive substance, and the business is forced to shut down temporarily. This would cause money and reputation loss for the company. COSHH allows companies to take precautions against this by purchasing PPE specific to the substances they are working with. Another impact of not following the regulations is that people could get diseases such as asthma or cancer. This can cost a lot of money to treat in hospitals, and the company would pay sick pay, causing them to lose even more money. The company would also lose reputation from not following the regulation and could potentially be sued for it. In a job involving extracting oil and gas, COSHH is significantly important as oil and gas are extremely flammable; one incident and the whole reserve could be on fire. |
| Mark scheme commentary for band 3 allocation |
| * AO1- A wide range of relevant knowledge and understanding is shown, which is accurate and detailed. Subject specific terminology is used consistently throughout. * AO2- Application of knowledge and understanding is appropriate, with clear relevance to the context. * AO3- Analysis and evaluation is present and very effective. The conclusions drawn are fully supported by judgements. |

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| Band 2 mid learner response (5-7 MARKS) |
| COSHH is the control of substances hazardous to human health and it helps workers stay safer at work. COSHH helps employers to either prevent, reduce or control the exposure of hazardous substances.  In the context of oil extraction and natural gas eye protection such as goggles should be worn as well as hearing protection ear protection and boiler suits as they will help to reduce exposure and contact with dangerous substances, also gas detectors should be issued.  If COSHH is not adhered to it may lead to large numbers of employees of the oil and gas company being exposed to many dangerous chemical substances, which may lead to lung disease, cancer and skin disease  By following COSHH regulations a company can save money first by not paying out in lawsuits and function more efficiently |
| Mark scheme commentary for band 2 allocation (4-6 marks) |
| * AO1- A range of relevant knowledge and understanding is shown, but may be lacking in sufficient detail, with a few errors. Subject specific terminology is used but is not always consistent. * AO2- Application of knowledge and understanding is mostly appropriate, but sometimes lacks clarity, and there may be a few errors. Analysis and evaluation is present and effective but may be lacking appropriate development. * AO3- There are attempts to draw conclusions, which are supported by judgements, but it is likely that some will be irrelevant. |

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| Band 1 low learner response (1-3 MARKS) |
| COSHH stands for Control of Substances Hazardous to Health Regulations. This makes sure that employers follow the rules to prevent ill health and work in a safe environment.  The employer decides what safety measures to take in the workplace; this might be use of PPE or ventilation in enclosure areas.  The Employee safety feelings could be boosted knowing their employers are taking the measures to ensure their safety. |
| Mark scheme commentary for band 1 allocation (1-3 marks) |
| * AO1- A limited range of relevant knowledge and understanding is shown, but is often fragmented. Subject specific terminology, if used, is often inappropriate and a lack of understanding is evident. * AO2- Application of knowledge and understanding is inappropriate, with any attempt showing fundamental errors. * A03- Analysis and evaluation, if present, is of limited effectiveness. Attempts to draw conclusions are seldom successful and likely to be irrelevant. |

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| Activity 1 |
| Using 3 coloured pens, highlight evidence of the different assessment objectives in each answer.  AO1 (Identifying knowledge of COSHH)  AO2 (Explaining why COSHH regulations are used within chemical and engineering environment)  AO3 (Drawing conclusions to explain the benefits or risk to employees and employers if COSHH regulations are not adhered) |

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| Activity 2 |
| What additional knowledge and conclusions could be added to the level 1 answer to get it into band 2 category?  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………… |
| Using the band 2 answer rewrite one of the examples given to make it clear giving an opinion and justification and relate the answer to the chemical engineering environment.  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  In band 3 can you identify how the writer has justified their opinion and what evidence have they provided to support their thoughts.  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  ……………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………… |