

EXAMINATION PAPER

Mining engineering manager of underground mines other than coal mines certificate of competence

MEM1 – Legislation knowledge

Written examinations held on 1 September 2019

Instructions to candidates

All questions are to be attempted and all answers are to be written in this booklet ONLY

All questions are of equal value, but parts of questions may vary in value.

Candidates must provide reference to all relevant legislation in their answers where applicable. *Note that some questions require answers related to hazards and control measures that are not specified in legislation but the answers should reflect the context of legislated requirements.*

Unless otherwise stated all references to the Act and Regulations are to the:

- *Work Health and Safety Act 2011*
- *Work Health and Safety Regulation 2017*
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013*
- *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*
- *Explosives Act 2003*
- *Explosives Regulation 2013*

Question 1

You have been promoted to manager of a mine which has been employing contractors to undertake mine development. The mine has been conducting all stope drilling and blasting. A decision has been made not to renew the contract for development. The development work will be taken "in house". You have been tasked with negotiating to purchase development equipment and directly engage development workers.

How would you go about this and ensure that the mine retains its low injury incidence record?

Reference to legislation is not required for this question, provided that your responses are in compliance with legislation.

Question 2

- a) The mechanical engineering control plan and an explosives control plan are 2 of the 4 prescribed principal control plans for mines.

Name the other 2 prescribed principal control plans for mines. (2 marks)

- b) For a mechanical engineering control plan, list 4 control measures that might be used at a mine for risks to health and safety. (4 marks)
- c) For either one of the two other control plans you have put in your answer, list 4 control measures that might be used at a mine for risks to health and safety associated with that control plan. (4 marks)

Question 3

Under what circumstances (with reference to the legislation) may an inspector serve:

- a) A notice of concern (2 marks)
- b) An improvement notice (3 marks)
- c) A prohibition notice (2 marks)
- d) For each notice give one example of when an inspector may serve such a notice. This should be an example of an observation that an inspector has made of or in relation to something at a mine. (1 mark for each example)

Question 4

- a) What are the requirements for emergency exits? (5 marks)
- b) What are the requirements for competent persons at the surface? (5 marks)

Question 5

Provide references to the relevant legislation and using your own words in your answer:

- a) What are the duties of a mine operator with regard to managing contractors' activities who work at their mine? (6 marks)
- b) What are the arrangements specified in the Work Health and Safety (Mines and Petroleum Sites) Regulation under which a contractor may operate under its own health and safety management plan? (4 marks)

Question 6

- a) What are the specific control measures for air quality and monitoring that apply to all mines? (3 marks)
- b) What are the specific control measures for air quality and monitoring at all underground mines? (7 marks)

Question 7

- a) List six hazards that you consider to be the most serious hazards that need to be addressed in the operation of mobile equipment in an underground mine and for each, explain why you have selected it. (4 marks)
- b) Describe what controls you would implement for each of the hazards identified in (a) above. (6 marks)

MEM2 – Legislation application

Written examination held on 18 September 2019

Instructions to candidates

All questions are to be attempted and all answers are to be written in this booklet ONLY

All questions are of equal value, but parts of questions may vary in value.

Candidates must provide reference to all relevant legislation in their answers where applicable.

Unless otherwise stated all references to the Act and Regulations are to the:

- *Work Health and Safety Act 2011*
- Work Health and Safety Regulation 2017
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013*
- Work Health and Safety (Mines and Petroleum Sites) Regulation 2014
- *Explosives Act 2003*
- Explosives Regulation 2013

Question 8

The risk of inundation or inrush in underground mines employing caving and open stoping mining methods is a known hazard.

As the newly appointed mining engineering manager for such an underground mine you have identified this risk as a 'principal hazard' as defined by legislation.

- a) List and briefly describe the various prescribed control measures for managing health and safety risks relating to inundation and inrush. (3 marks)
- b) You are going to review the operation's current inundation or inrush hazard management plan and produce a compliant principal hazard management plan (PHMP). Briefly describe the process that you would follow and refer to any associated legislative requirements. (6 marks)
- c) List, categorise, and describe controls that you would implement to safeguard workers from injury from inundation or inrush whilst in the vicinity of a block cave production level draw point. In categorising the controls refer to the hierarchy of controls in Work Health and Safety Regulation 2017, clauses 35 and 36:
 - Elimination
 - Substitution
 - Isolation
 - Engineering
 - Administrative
 - PPE (6 marks)

Question 9

Referring to the relevant legislation and using your own words in your answer:

You are the mining engineering manager at a mine that has a friction winder and a skip above a cage operating in a 400 metre deep shaft. There are two cage access points: one on the surface plat, and the other on 4 Level, which is 400 metres below surface. The mine also has a decline entry.

You have just been notified by the surface control room operator that they have received an emergency radio alert of an incident in the shaft involving a cage containing two persons. The winder driver had radioed the alarm to the control room, and reported that as the cage was approaching the surface plat, the skip above the cage impacted the extendable surface plat. The winder driver stopped the winder and contacted the two persons in the cage who were shaken but uninjured.

You have since found that the extendable plat has been severely damaged and cannot be retracted to allow the cage to come up to the surface plat location. The skip is clear of and just below the plat. The cage is undamaged and located about 10 metres below surface.

As the mining engineering manager, explain the actions you would take:

- a) Immediately after you are first told of the incident. (5 marks)
- b) To ensure the safe rescue to surface of the two persons in the cage. (5 marks)
- c) To ensure that a similar shaft incident does not occur again at the mine. (5 marks)

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