

EXAMINATION PAPER | CERTIFICATE OF COMPETENCE

Mining engineering manager of coal mines other than underground mines

OCM1 – Mining Legislation

Instructions to candidates

All five (5) questions are to be attempted.

Legislation assessed:

Work Health and Safety Act 2011

Work Health and Safety Regulation 2011

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 (20 marks)

Your mine intends to use a contractor to carry out auger mining of a final high wall within the mining production area. The contractor will supply all labour and equipment for the task which is anticipated to take approximately 6 months to complete.

As the Mining Engineering Manager (MEM), describe the process you will use to engage the contractor for all aspects of this task with reference to the relevant legislative requirements.

Question 2 (20 marks)

Identify 4 notices that you would be aware of, as the Mining Engineering Manager (MEM), which may be issued to the Mine Operator by an Inspector from the NSW Resources Regulator. Briefly summarise the legislative requirements associated with each of those notices.

Question 3 (20 marks)

At 4am in the morning you, as the Mining Engineering Manager (MEM), receive a telephone call from an Open Cut Examiner (OCE) who informs you of a collision that has occurred between a haul truck and a grader at a T-intersection. It appears that the grader operator has received fatal injuries from the incident and the truck operator is in severe shock.

Summarise all the immediate and foreseeable legislative requirements that are required to be complied with in relation to this incident.

Question 4 (20 marks)

As the Mining Engineering Manager (MEM), explain:

a) Health Monitoring - What are the three key duties that a PCBU is required to ensure? (10 marks)

- b) Airborne dust in open cut coal mines - What are the sampling locations, persons to be sampled and frequency of those samples? (10 marks)

Question 5 (20 marks)

A risk management approach is a key part in managing alcohol and other drug use in the workplace.

As a Mining Engineering Manager (MEM), summarise what is required to be put in place at an open cut mine to manage alcohol and other drugs and the process you would use to establish and maintain those requirements?

OCM2 – Mining Legislation

Instructions to candidates

Only five (5) of the eight (8) questions are to be attempted.

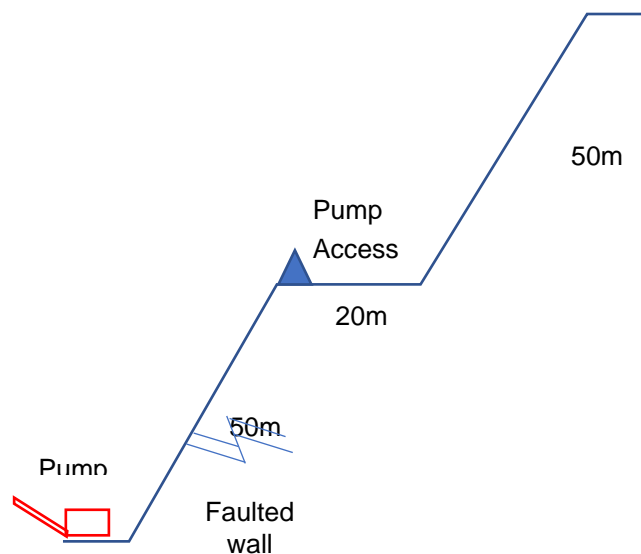
Questions 5 and 6 are compulsory.

All questions are of equal value of 60 marks; however parts of a question may vary.

Question 1 - Slope stability

You have been recently relocated to another mine as Mining Engineering Manager (MEM). This mine has a history of geological issues in the western side of the pit where there's two 50m highwalls with a 20m pump access bench between each highwall.

Present in the highwall is a normal fault at an 80° angle with a 15m offset in the strata.



- List what effect the fault could have on the pump access bench (10 marks)
- Describe the systems you would have in place to control this type of risk. How would you determine adequacy of these systems? (20 marks)
- What other ground conditions could be present that could influence the stability of the wall (10 marks)
- Describe a highwall Trigger Action Response Plan (TARP) and list 4 controls relevant to the faulted area (20 marks)

Question 2 - Explosives management

You are a Mining Engineering Manager (MEM) at a medium sized open cut mine. The project manager has tasked you to implement an electronic tablet-based logging system to measure and produce load sheets for the blast crew. Your site has 5 Mobile Processing Units (MPU) and a blast crew of 20 shotfirers, MPU operators and stemmers. The electronic system wirelessly transfers the data to all the trucks and back to the office.

- What would be the key infrastructure and hardware requirements for this system? (10 marks)

- b) Outline an implementation plan for the electronic load sheets (20 marks)
- c) List key risks and controls for this type of system. How would you determine how effective the controls were? (15 marks)
- d) List the advantages of implementing Electronic load sheets (15 marks)

Question 3 - Risk management

You are the Mining Engineering Manager (MEM) of a large open cut coal mine. There have been many incidents in recent times where hazards have not been properly identified before or during certain tasks. You decide as a result of these incidents to review your Risk Management System (RMS).

- a) Who would you involve in the review? (10 marks)
- b) What information would you use in the review? (10 marks)
- c) What is a 'hazard'? (5 marks)
- d) What is a 'risk'? (5 marks)
- e) Outline the type of risk assessment processes that you would expect to be outlined in the RMS. Include a description of each process and in what circumstances they are required to be completed. (30 marks)

Question 4 - Rope shovel incident

You are the newly appointed Mining Engineering Manager (MEM) of a small multi-seam open cut coal mine which has a large electric rope shovel that removes the bulk of the overburden. The rope shovel is currently located deep in the pit with 3 trucks allocated to it as they are tipping on a dump nearby the rope shovel. You have just had a call from your night shift Open Cut Examiner (OCE) who has told you that "One of the trucks has just pulled down the cable and cable stands near the rope shovel. The power tripped while the rope shovel was loading another truck and the bucket has made contact with the body of that truck"

- a) What further information do you need? (10 marks)
- b) What is your immediate action? (10 marks)
- c) Is this a reportable event? Explain your reasoning. (10 marks)
- d) Explain how you would conduct an incident investigation into this incident, what areas you would be investigating and possible causes. (30 marks)

Question 5 - Surface transport (compulsory)

You are the Mining Engineering Manager (MEM) for an open cut mine that had a high potential near miss between a light vehicle and 789 water truck at an intersection.

- a) What does legislation require you to do? (10 marks)
- b) This is not the first near miss between a heavy and light vehicle that has recently occurred. Your site's traffic rules are based on NSW road rules with signage controlling traffic flow. An SSHR on your site requests a review of control measures and change to "hierarchy of control" to manage traffic flow at intersections. How would you evaluate the two methods of traffic control? (10 marks)
- c) If you were to transition to hierarchy of control, outline how you would manage a safe transition to this method of operation. (30 marks)
- d) How would you validate the success of the transition (10 marks)

Question 6 - Surface transport (compulsory)

You are the Mining Engineering Manager (MEM) of an open cut mine utilising one electric shovel, hydraulic excavators and front end loaders. The operation is about to mine over old bord and pillar workings. The workings were mined circa 1950's and some of the areas of the colliery had secondary extraction of the pillars.

- a) What systems would you put in place to ensure the health and safety of the workers at your operation? Include the hazards and controls you are looking to address. (25 marks)
- b) What changes would you make to your Emergency Plan? (15 marks)
- c) What legislative requirements must you satisfy for significant operational changes such as working over underground workings? (20 marks)

Question 7 - Spontaneous combustion

You are a Mining Engineering Manager (MEM) for a large open cut mine running electric shovels and hydraulic excavators. The overburden and coal contains high sulphur and is prone to spontaneous combustion throughout the deposit. Recently you have had an increase in community complaints made to the EPA relating to dust and odour who then have requested a formal response from your mine. The operators on site are also starting to make reports regarding the smell citing they are getting headaches and nausea.

- Outline how you would address the spon com problem on your site, including processes you use to implement changes. Include the major controls (20 marks)
- A fitter has reported feeling ill whilst working on a field service in pit on a dozer. Describe your actions in dealing with this situation? (20 marks)
- The fitter is sent to hospital and receives medical treatment but released later that day. Is this a Notifiable Incident? (20 marks)

Question 8 - Spontaneous combustion

You are the Mining Engineering Manager (MEM) at a large open cut mine. The basal seam is 4m thick and your company is introducing a small longwall panel to be installed to extract this seam beyond your endwall. The underground operation was not part of the long term plan for the operation as it was only highlighted recently after a geological review of the deposit.

The development includes:

- Shotcrete and meshing of existing endwall immediately above the portals
- Coal stacker extending from the wall to stack coal for later reclamation with front end loaders & trucks
- 5 gigalitre perched dam adjacent to portal for underground mine water
- Ventilation fan
- Electrical reticulation and substation

The endwall is 150m high with catch benches every 30meters and is surrounded by dumped material in your low wall system.

The development work is intended to commence in 6 months. You have been tasked with the introduction of the underground mine in your existing open cut operations.

- Describe how you would commence this implementation from concept stage to construction execution stage. (25 marks)
- What are the major hazards associated with this change? (15 marks)
- What are the legal obligations you must satisfy with this change? (20 marks)

More information

NSW Department of Planning & Environment
Resources Regulator
Mining Competence Team

T: 02 4931 6625

Email: minesafety.competence@industry.nsw.gov.au

Acknowledgments

Mining engineering manager coal mines other than underground examination panel

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