

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

Instructions to candidates

Legislation to be 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 2014

OCM 1 – Mining legislation

All questions are to be attempted.

Answers are to be written in pen in this booklet ONLY.

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

Refer to the relevant legislative provisions when answering all questions.

Question 1

At 11pm you receive a telephone call from the shift Open Cut Examiner (OCE) informing you that a large section of high wall has collapsed which has partially engulfed a rotary blast hole drill.

The operator of the drill has escaped and is in shock but otherwise unharmed.

The drill is extensively damaged.

Summarise all the immediate and foreseeable legislative requirements that are required to be complied with in relation to this incident (20 marks)

Question 2

In a four column table, identify and summarise;

- All of the notices that could be issued at a mine, from any source, under the applicable Work Health & Safety legislation.
- Who issues each notice?
- What is the purpose of each notice?
- What action that may need to be taken in response to each notice?

(25 marks)

Question 3

As the Mining Engineering Manager of an open cut coal mine you have been required to review the principal hazard management plan relating to ground or strata failure.

- a) Under what circumstances is the mine required to review this PHMP? (5 marks)
- b) Summarise the key points in legislation that you would reference to review and implement the revised plan. (20 marks)

Question 4

Managing fatigue at mines will be the subject of targeted assessments that will focus on how worker exposure to fatigue is prevented. You have been notified that the Regulator intends to conduct a targeted assessment on fatigue management at your operation.

In preparation for the targeted assessment, summarise your obligations under legislation that you will need to demonstrate in managing risks to health and safety associated with fatigue. Provide any relevant practical examples of what has been put in place at your site to demonstrate compliance. (30 marks)

OCM 2 – Open cut mining practice

All five (5) questions are to be attempted.

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

Answers are to be written in this booklet ONLY.

Drawing tools may be used for sketches.

Non-programmable calculators may be used.

Question 1 – Incident management

You are the Mining Engineering Manager of a site that has just purchased a neighbouring mine that was in 'care and maintenance' with no production activities occurring.

Your current site consists of hydraulic excavators mining overburden and front -end loaders mining coal. It also has a coal preparation plant complex and train loading facility on site which are under your control.

The purchase of the neighbouring site included all assets consisting of a large excavator, rear dump trucks, bulldozers, watercarts, graders and rotary blast hole drills as well as a coal preparation plant, workshop and other surface infrastructure.

You are expanding your operations to start up an excavator with associated fleet on the new site and that coal will be washed at the newly purchased coal preparation plant. You are responsible for ensuring all approvals and safe systems of work are in place before conducting any mining operations

- a) List the main approval and notification processes required before conducting production operations (25 marks)

- b) What processes do you put in place, before operations begin, to secure and promote the health and safety of persons on site? Include a brief description of each activity (35 marks)

Question 2 – Hot and reactive ground

Your Blast Supervisor has reported to you heating of some spilled ANFO on some drill cuttings on a shot that is currently being loaded. The spilled ANFO on the drill cuttings was giving off white smoke. The shot is a large overburden blast, 30m deep with approximately 500 holes. The shot crew started loading from the face row working towards the back of the shot when they noticed the heating. They are only half way through loading the shot. The shot is predominantly ANFO, with some HANFO for damp holes.

- a) What are your immediate instructions to control this situation? (30 marks)
- b) You have not identified reactive ground previously. Detail what systems you would put in place to manage this new hazard? Include specific controls for each hazard you identify. (30 marks)

Question 3 – Incident management

You are the Mining Engineering Manager of a large open cut mine consisting of hydraulic excavators, rope shovels, draglines and associated ancillary plant.

A public road passes through the mining lease and there is a dual lane 'cut and cover' underpass established beneath this road to allow for rear dump haul trucks to pass underneath where overburden and coal is hauled.

One afternoon at approximately 3pm you receive a call from your OCE that a 240 tonne truck has driven across to the opposite side of the road through the cut and cover tunnel and has collided with the safety barrier on the edge of the haul road. The operator has some cuts and bumps from the impact and is visually upset. The front corner of the body has also damaged one of the piers beneath the public road that supports the bridge. You are off site but only 30 minutes away.

- a) What are your immediate actions? (15 marks)
- b) What are the main areas you would investigate that could have contributed to this incident? Describe how each area could have caused the incident and what controls should have been in place that potentially failed. (25 marks)
- c) After reviewing witness statements and preliminary incident information, you discover that the operator driving the truck cannot recall what happened. What are your next steps to allow operations to resume and the operator to return to work? (20 marks)

Question 4 – Auger mining

Your mining operations is considering augering the final seam prior to back filling that area of pit floor with overburden. Augering has not been considered in the original mine plan, and approval has been granted as part of a recent approval to extend the life of the open cut operations.

The seam to be augured is 3.2 m thick and dips into the wall at 2 degrees. It lies at the bottom of a highwall over 120 m high, with catch benches every 30 m. Each highwall angle between catch benches is 70 degrees.

The auger contractor has 1.8 m diameter flights and a maximum theoretical reach of 100 m.

- Estimate the realistic amount of coal you can recover for every 100 m of exposed coal (state all assumptions) (20 marks)
- What are the hazards and controls associated with this activity? (15 marks)
- What systems would you put in place to ensure safe augering operations within your open cut mine? (15 marks)
- What legislative requirements must you consider? (10 marks)

Question 5 – Tyre and rim management

You are the Mining Engineering Manager at a medium sized mine, running 793 trucks on B.S 46/90R57E3A tyres. The trucks predominantly run on 10% ramps with 600T class excavator with approx. 6 trucks/circuit.

- What does the 46/90_R_57 stand for? (5 marks)
- How does TKPH impact mining operations? (15 marks)
- Given the below tyre work parameters, calculate the TKPH: (10 marks)

Loaded Front = 65 +

Unloaded = 38 +

Av work shift speed in 1 hour = 23km/hr

- What actions are required if a haul truck exceeds the tyre TKPH? (15marks)
- Describe what you would have in your procedure if a worker reported a burning rubber smell on a tyre? (15marks)

More information

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Resources Regulator

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Acknowledgments

Open cut examiner of coal mines other than underground mines examination panel

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