

WESTERN AUSTRALIA
UNDERGROUND SUPERVISOR'S CERTIFICATE OF COMPETENCY
PRACTICAL MINING EXAMINATION

28th April 2011

Time allowed: **Three (3) hours**
Reading Time: **15 minutes**

ADVICE TO CANDIDATES

- **Answers must be written in ink or ball point pen.**
- **Use sketches to describe your answers where appropriate.**
- **Sketches may be done in pencil.**
- **Check that you have the correct examination paper.**

A Total of 60 per cent is required for a pass.

Read all questions carefully and make sure that you understand what you are being asked to do.

THERE ARE SEVEN (7) QUESTIONS IN THE PAPER.
ANSWER ONLY FIVE (5) OF THE SEVEN (7) QUESTIONS

QUESTION 1

When scaling from a stage/platform mounted on a front-end-loader, what specific procedures relative to working from the stage/platform need to be put in place?

20 marks

QUESTION 2

You have the task of preparing for and supervising the mining of a 15 metre long, air leg rise at an angle of 55 degrees from the horizontal. The rise is to be 1.2m x 1.2m and will break through into the footwall of the level above.

- (1) How would you prepare the site prior to mining and the holing point prior to holing through?
- (2) What safety practices and procedures would you have in place during the mining of the rise?
- (3) How would you ensure the ongoing safety of the excavation following the completion of the rise?

20 marks

QUESTION 3

A remote controlled diesel powered loader is to be used to load ore from an open stope. Describe the precautions (including modifications to the equipment) you would take to carry out the operation safely.

20 marks

QUESTION 4

You are required to provide secondary ventilation for a new 5m x 5.5m development heading. Describe in detail how and where you would install a large, two stage electric fan and ventilation ducting to provide fresh air to the face.

In your answer you should give full details with the aid of sketches, of methods, equipment and procedures that you would use.

20 marks

QUESTION 5

Describe, in correct sequence, the step by step procedures you would follow in the setting up an electric/hydraulic jumbo for drilling out a development face. The jumbo is parked 20m from the face at the electrical power supply source. Assume that the heading has been cleaned up, scaled and bolted and marked out.

20 marks

QUESTION 6

Describe in detail what you understand by the following terms:-
(Use sketches where appropriate).

- | | |
|------------------------------|-------------------------|
| (a) Butt | (f) Pillar |
| (b) Primer | (g) Eye Bolt |
| (c) Footwall and Hangingwall | (h) Brattice |
| (d) Split Set Rock Bolt | (i) Charged Hole |
| (e) Bearer | (j) Emulsion Explosives |

20 marks

QUESTION 7

Whilst doing your round on night shift you come across one of your men who has been pinned against the wall by a large rock. Although the person is conscious it is obvious that he is seriously injured. What immediate action would you take?

List the additional actions you would take and procedures you would initiate (including the provision of information to relevant personnel) to ensure that a rescue was promptly and efficiently effected.

Total 20 marks

END OF PAPER

WESTERN AUSTRALIA
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PRACTICAL MINING EXAMINATION
29th September 2010

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QUESTION 1

You have just been appointed Underground Supervisor of a small diesel equipped operation, and visit the underground workshop and re-fuelling bay. A degreasing tank is situated in one corner.

- (a) Describe the features and procedures that should be included in the safe operation of the degreasing tank. **6 marks**
- (b) Describe seven other potential hazards that may exist in a workshop or re-fuelling bay, and methods of eliminating or reducing those hazards. **14 marks**

Total 20 marks

QUESTION 2

List 5 potential causes of an outbreak of fire on an underground diesel powered loader. **5 marks**

Explain in detail any five (5) safety features or modifications which could be made to an underground diesel powered loader to minimise the risk of fire.

20 marks

Total 20 marks

QUESTION 3

In hot and humid conditions the risk of heat stress or heat exhaustion is present, and may cause serious health problems, to the extent that death may occur.

- (a) **As Manager or Supervisor what would you do to manage work in hot and humid conditions?** **10 marks**
- (b) **Summarise the factors you would discuss in an induction of new employees with regard to heat related problems.** **10 marks**
- Total 20 marks**

QUESTION 4

During a recent visit to the mine the Inspector had made a Record Book entry regarding the poor state of the mobile equipment fleet.

Prepare an inspection and maintenance program for the fleet on a daily, weekly, and monthly basis, so that the safety and health of the operators is not compromised..

Total 20 marks

QUESTION 5

- (a) **Describe a typical development cycle of drilling, charging, mucking, provision of services, ventilation, etc**
Your answer should concentrate on the hazards associated with each part of the cycle, and the precautions you would take to minimise these hazards.

OR

- (b) **Describe in detail the layout and development of a stoping block using a method that is familiar to you. Include in your answer such matters as ventilation, stope access, ground support, drilling methods, ore removal.**

Total 20 marks

QUESTION 6

Describe how you would ventilate the following work places:

- (a) A shaft being sunk from the surface whose current depth is 200m. 5 marks
OR
A decline heading 200m from the portal.
- (b) A crosscut being developed using an airleg and loader 5 marks
- (c) A blind stope with a rearing at each end 5 marks
- (d) A rise whose face is 20m above the backs of the level. 5 marks

Total 20 marks

QUESTION 7

You have been instructed by the Underground Manager to set up a Underground Magazine underground.

Outline the main points you would take in to consideration when locating and setting up the magazine.

Total 20 marks

END OF PAPER

WESTERN AUSTRALIA
UNDERGROUND SUPERVISOR'S CERTIFICATE OF COMPETENCY
PRACTICAL EXAMINATION
8th April, 2010

Time allowed: **Three (3) hours**
Reading Time: **15 minutes**

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THERE ARE SEVEN (7) QUESTIONS IN THE PAPER.
ANSWER ONLY FIVE (5) OF THE SEVEN (7) QUESTIONS

QUESTION 1

A small underground mine is to be brought in to operation in a remote locality. You have been appointed as underground manager and your first priority is the preparation of a project management plan. One of the requirements of such a plan is a broad assessment of the major risks and a summary of the strategies proposed to manage those risks.

- (a) **List eight (8) possible hazards that could occur at the mine** **8 marks**
- (b) **What means would you consider for preventing, or dealing with the risks associated with the above hazards?** **12 marks**

Total 20 marks

QUESTION 2

The company you have joined has a poor safety record. The Underground Manager has requested that you draw up a list of safety practices for incorporation into standard work procedures.

List the points you would include, and the reasons, for the following occupations:

- (i) **truck drivers, or locomotive drivers** **6 marks**
- (ii) **jumbo drillers, or airleg miners** **8 marks**
- (iii) **back operators** **6 marks**

Total 20 marks

QUESTION 3

You are required to provide secondary ventilation for a new 5m x 5.4m development heading which will be 300 metres long.

Describe in detail how and where you would install a large two stage electric fan and ventilation ducting to provide fresh air to the face.

(In your answer you should give full details, with the aid of sketches, of the equipment and procedures that you would use)

Total 20 marks

QUESTION 4

Whilst doing your round on night shift you come across one of your men who is pinned against the wall by his loader. The loader's motor is still idling, and the operator, although conscious, is suffering both from the weight of the loader on his torso, and burns from the exhaust.

- (a) **What immediate action would you take?** **10 marks**
- (b) **List the additional actions you would take and procedures you would initiate to ensure that the injured person is given prompt and effective treatment?** **10 marks**

Total 20 marks

QUESTION 5

Describe in detail what you understand by the following terms:

- | | |
|---------------------------------------|--------------------------------|
| (a) Butt | (f) Pillar |
| (b) Primer | (g) Eye Bolt |
| (c) Foot Wall and Hanging Wall | (h) Brattice |
| (d) Split Set Rock Bolt | (i) Charged Hole |
| (e) Bearer | (j) Emulsion Explosives |

Total 20 marks

QUESTION 6

A vertical rise has been developed between two levels 40m apart.

Describe in detail how you would install ladders in the rise and what other steps must be taken before the rise can be used as part of the mine escape route.

Total 20 marks

QUESTION 7

A diesel powered loader has been off-site for a major service and it is your job to check it over before sending it underground.

Describe the points you would look for and the tests you would undertake.

Total 20 marks

END OF PAPER

WESTERN AUSTRALIA
UNDERGROUND SUPERVISOR'S CERTIFICATE OF COMPETENCY
MINING PRACTICAL EXAMINATION
29 September, 2009

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Reading Time: **15 minutes**

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QUESTION 1

A new employee underground with basic competency levels in blasting has been given the task of secondary breaking of over-size rocks in a number of mill-holes. Bogging from the mill-holes is being carried out at the same time by a front end loader tramping to a nearby grizzly.

Blasting is permitted at any time.

As his supervisor, what instructions would you give this employee to enable him to carry out his task, and what precautions would you stress to him so that he can work safely and also not endanger others?

Total 20 marks

QUESTION 2

List ten (10) important topics that you would include in an induction for underground workers and give your reasons for including them.

20 marks

Total 20 marks

QUESTION 3

Before driving a light vehicle, what safety checks (pre-start and after start) must be made?

What other precautions must be taken whilst driving a light vehicle underground and when leaving it parked underground?

Total 20 marks

QUESTION 4

Incidents are frequently reported to the Department where fires occur in underground operations.

- (a) List eight (8) potential causes of fire. 4 marks
- (b) Define the fire precautions you would require at the following:
- (i) an underground mobile equipment workshop 4 marks
 - (ii) an underground diesel refueling area 4 marks
 - (iii) a shaft plat or pump station 4 marks
 - (iv) a main underground explosive magazine 4 marks

Total 20 marks

QUESTION 5

You are the supervisor of a ring drilling operation drilling large diameter holes (up to 165mm diameter) with percussion drills.

- (a) Describe the safety precautions you would take when using these drills on air pressure boosted from 100psi (7 bar) to 250psi (17bar). 15 marks
- (b) List five (5) safety rules you would give to a new employee regarding the use of compressed air from a standard underground supply. 5 marks

Total 20 marks

QUESTION 6

How would you minimise the generation of atmospheric contaminants and what methods would you employ to protect the miner in the following places:

- (i) Boggie from mill –holes using a front end loader?
 - (ii) Underground crushing station?
 - (iii) Drilling an underground raise-bore hole?
 - (iv) Scraping in a cut and fill stope?
 - (v) Development driving on a level?
- Total 20 marks

QUESTION 7

A sampler travelling through a cut and fill stope has fallen down the steel ore-pass. The triangular frame had previously been removed from the top of the pass because the miner was firing over the top of the pass.

The unconscious sampler is wedged in the pass 20 metres below the floor of the stope. The backs above the pass have not been scaled. You are the team leader of the Mines Rescue Squad.

Describe how you would rescue the victim and what precautions you would take.

Total 20 marks

END OF PAPER

Regulation Part 9 - Ventilation and Atmospheric Contaminants

- | | | | |
|-----|---|---|-------------|
| 16. | (a) What is required of the manager if any fan or ventilation device breaks down? | 2 | 9.20(1) |
| | (b) What is required with respect to air doors? | 3 | 9.20(4)&(5) |

Regulation Part 10 - Specific Requirements for Underground Mines

- | | | | |
|-----|--|-----|---------|
| 16. | What is required of the manager when | | |
| | (a) Persons are working alone? | 2.5 | 10.5(1) |
| | (b) Hazardous conditions exist in the workplace? | 2.5 | 10.5(2) |

Regulation Part 11 - Winding, Winding Ropes and Signals

- | | | | |
|-----|--|---|-------|
| 18. | A person must not travel in a shaft or winze in a cage, skip, kibble, or other conveyance which contains timber, pipes, rails, explosives, ore, waste rock, or similar material, or tools. | | |
| | List the 5 situations where this does not apply. | 5 | 11.57 |

END OF PAPER