

WESTERN AUSTRALIA

**RESTRICTED QUARRY MANAGER (NON-EXPLOSIVES)  
CERTIFICATE OF COMPETENCY**

**QUARRYING EXAMINATION**

**28th April 2011**

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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.  
YOU SHOULD ATTEMPT QUESTION 1 WHICH IS COMPULSORY,  
AND FIVE OTHER QUESTIONS.**

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### **QUESTION 1 (COMPULSORY)**

Regulations now require the preparation of an Emergency Plan for all mine sites.

This involves, among other things, the identification of hazards that might cause an emergency at the mine, and the development of procedures to deal with emergencies.

Assuming you are the quarry manager of a 20 metre deep clay pit which mines from 4 x 5 metre high benches using backhoes for digging and loading:

- (a) **List five (5) hazards, other than fire, which you believe might lead to an emergency arising in such an operation, and give your reasons.** **10 marks**
- (b) **What procedures would you establish for a haul truck driver to follow in the event of an outbreak of fire in the engine compartment while:**
- (i) **travelling on the flat?** **5 marks**
  - (ii) **travelling on the ramp?** **5 marks**

**Total 20 marks**

### **QUESTION 2**

**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 and when leaving it parked in order to inspect the workplace?**

**Total 16 marks**

### QUESTION 3

You are the newly appointed manager of a local open pit operation. The General Manager has dismissed your predecessor for comments to the effect that "if the town's residents can't stand the noise living next to a pit they should move out of town or wear earplugs. This pit supports the town and the locals shouldn't forget it."

You have just received three long term compensation claims for hearing loss from ex-employees. Many genuine complaints are received daily from neighbours about the noise generated from the pit. The General Manager asks for a report on these claims and complaints.

**Write a letter to the General Manager explaining the reasons for the problems and the steps you would take to rectify them. Clearly identify the likely sources of noise in the plant and the pit.**

**Total 16 marks**

### QUESTION 4

- (a) **List four (4) methods which may be used to free large rocks when they become jammed in a jaw crusher. 4 marks**
- (b) **Give the advantages and disadvantages of each method. 8 marks**
- (b) **What safety precautions are necessary with respect to each method?. 4 marks**

**Total 16 marks**

### QUESTION 5

- (a) **What are the advantages and disadvantages of breaking rock by ripping as against blasting? 12 marks**
- (b) **Under what circumstances would you use ripping? 4 marks**

**Total 16 marks**

## QUESTION 6

As the Quarry Manager of a two bench open pit, working two shifts and utilising backhoes, front end loaders, dozers and haul trucks, you have decided, as part of your duty of care obligations, to conduct a thorough assessment of the workplaces after dark.

**Describe the extra hazards that may arise due to night-time Operations and the precautions you would take to minimise them.**

**Total 16 marks**

## QUESTION 7

You have just been appointed Quarry Manager of a small open pit operation, and visit the workshops. 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 five other potential hazards that may exist in a workshop, and methods of eliminating or reducing those hazards.**

**10 marks**

**Total 16 marks**

**END OF PAPER**

**WESTERN AUSTRALIA**  
**RESTRICTED QUARRY MANAGER (NON-EXPLOSIVES)**  
**CERTIFICATE OF COMPETENCY**

**QUARRYING EXAMINATION**

**29<sup>th</sup> September 2010**

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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.

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YOU SHOULD ATTEMPT QUESTION 1 WHICH IS COMPULSORY,  
AND FIVE OTHER QUESTIONS.**

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### **QUESTION 1**

Production from a pit is by scrapers dumping into a drive-over hopper which is covered with grizzly bars to prevent large lumps of oversize entering the processing system.

Clayey material in the hopper has hung up and it will be necessary for the operator to enter the hopper to rectify the situation.

Hopper discharge is by way of an apron feeder which runs the full length of the hopper.

**As the Quarry manager, what instructions would you give the operator to enable him to perform the task safely, and what precautions would you take?**

**20 marks**

### **QUESTION 2**

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.

**marks**

**16**

### **QUESTION 3**

You have arranged for a front end loader and operator from an adjacent quarry to assist your quarry loading operations for a few days. The vehicle and operator have arrived ready to commence work. What checks would you make and what instructions and advice would you give to the operator before he commences work?

**16 marks**

#### QUESTION 4

A quarry produces limestone by ripping and dozing. The limestone is fed into an "in-pit" crushing and screening plant by a front end loader.

- (a) List those operations likely to be a major source of dust generation. 4 marks
- (b) How would you control the dust generated in each operation? 8 marks
- (c) What methods are available to further protect the employees from exposure to, or inhalation, of dust? 4 marks

**Total 16 marks**

#### QUESTION 5

You have just been appointed as Quarry Manager of a previously abandoned old quarry which is being re-commissioned. The quarry is located adjacent to a new housing estate.

The residents are concerned with the environmental problems the quarry and crushing plant may cause.

**Identify possible sources of pollution and propose solutions to minimise the problems.**

**Total 16 marks**

#### QUESTION 6

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) What policies would you put in place to manage the hazards associated with hot and humid conditions? 6 marks
- (b) Summarise the factors you would discuss in an induction of new employees with regard to heat related problems. 10 marks

**Total 16 marks**

### **QUESTION 7**

Compressed air may be used in various locations on a mine site, such as in the sample preparation area and workshops.

- (a) **Describe the hazards that compressed air may present in all the areas of the mine.** **6 marks**
- (b) **As the Manager, what precautions and training would you introduce to reduce the hazards?** **10 marks**

**Total 16 marks**

**END OF PAPER**

**WESTERN AUSTRALIA**

**RESTRICTED QUARRY MANAGER'S (NON – EXPLOSIVES)  
CERTIFICATE OF COMPETENCY**

**QUARRYING EXAMINATION  
8<sup>TH</sup> April, 2010**

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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.  
YOU SHOULD ATTEMPT QUESTION 1 WHICH IS COMPULSORY,  
AND FIVE OTHER QUESTIONS.**

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### **QUESTION 1 - COMPULSORY**

It has to be accepted that mining operations impact on the environment.

Outline the procedures to be undertaken in relation to:

- (a) Clearing of land.
- (b) Topsoil removal.
- (c) Overburden removal
- (d) Rehabilitation planning and End Use

(Diagrams may be used to illustrate your answer)

**(TOTAL 20 Marks)**

### **QUESTION 2**

Outline eight (8) main points that are necessary for the safe dumping of waste material on a waste dump 30 metres high.

**(16 Marks)**

### **QUESTION 3**

You have arranged for a front end loader and operator from an adjacent quarry to assist your quarry loading operations for a few days. The vehicle and operator have arrived ready to commence work. What checks would you make and what instructions and advice would you give to the operator before he commences work?

**(16 Marks)**

#### QUESTION 4

Drillers; whether exploration, sample or production, are exposed to a number of hazards.

- (a) List 4 hazards that could affect the driller. (4 marks)
- (b) What precautions would you take to minimise the danger to the drillers from the above hazards? (12 marks)

**(TOTAL 16 Marks)**

#### QUESTION 5

You have been appointed as the Quarry Manager at a large mineral sands dredging operation. Mining is conducted on a 24 hour/day basis and utilises a dredge vessel and a floating concentrator. The mine manager has requested that you review aspects of operational safe working conditions and practices.

Describe what you would check for to ensure that:

- (a) Safe access, via pontoons to the dredge and concentrator, is in place;
- (b) A person who has fallen overboard from the dredge vessel can be quickly rescued;
- (c) Any significant list (tilt) of the dredge or concentrator is noted. What remedial action is to be taken?

**(TOTAL 16 Marks)**

#### QUESTION 6

You are the quarry manager of a sand pit and screening plant, situated on the outskirts of a town.

During the week-end when the mine is not working, three children enter the lease and manage to start up the screening plant. One child is injured when the handbrake of a truck is released and the vehicle rolls down the ramp and hits the wall.

- (a) What are your responsibilities under the Act and Regulations (8 marks)
- (b) What action can you take to prevent a similar occurrence? (8 marks)

**(TOTAL 16 Marks)**

## QUESTION 7

You are the quarry manager of an open pit operating trucks and loaders on several benches. A water truck is employed to water the roads and the stockpiles.

When the truck is being driven down the ramp the driver appears to lose control of the vehicle and skids on the wet surface, hitting the wall.

The driver is slightly injured. When you enter the truck cab to assist the driver, you notice a smell of alcohol and find a broken bottle of beer on the floor.

- (a) What are your responsibilities with regard to intoxicating liquor on mine sites? (4 marks)
- (b) Give 4 possible reasons for the accident. (4 marks)
- (c) How would you prevent such an accident from recurring? (8 marks)

**(TOTAL 16 Marks)**

**END OF PAPER**

**WESTERN AUSTRALIA**  
**RESTRICTED QUARRY MANAGER'S CERTIFICATE OF**  
**COMPETENCY**

**QUARRYING EXAMINATION**  
**(Where explosives are not used)**

29 September, 2009

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

**Answers must be written legibly in ink or ball point pen.**  
**Sketches may be done in pencil.**  
**Check that you have the correct paper.**

**Note:** An aggregate of 60 percent is required for a pass.

**Advice to Candidates**

**Read the questions carefully** before answering them in your own words.  
Use sketches to illustrate your answers where appropriate. Keep answers  
short and use point form where appropriate.

**THERE ARE EIGHT (8) QUESTIONS IN THE PAPER.**

**ANSWER QUESTIONS 1 AND 2 (COMPULSORY)**

**AND FIVE OTHER QUESTIONS OF YOUR CHOICE**

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**Question 1 (Compulsory question)****20 marks**

An accident has occurred in an neighbouring open pit mine. It involved a truck driving through overhead power lines. You want to alert your personnel to the dangers involved in overhead power lines and develop a safety talk to be given to all personnel on-site.

- (a) What are the two major hazards involved when mobile equipment comes into contact with overhead power lines and how would you deal with them? **10 marks**
- (b) What preventive measures would you mention in your safety talk? Remember that this safety talk is directed both at the fixed plant personnel and the mobile equipment operators. **10 marks**

**Question 2 (Compulsory question)****20 marks**

- a. Describe the surface mining operation where you are employed (or have been employed recently) using the following headings (if applicable).

- (a) General description and purpose of the operation
- (b) Loading
- (c) Haulage
- (d) Roads and dumps
- (e) Miscellaneous equipment and its functions
- (f) Dewatering
- (g) Lighting
- (h) Supervision
- (i) Environmental provisions

**12 Marks**

- b. Suggest variations that will improve the operations (b)(c)(d) and (i).

**8 Marks****Answer any five (5) of the following questions****Question 3****12 Marks**

Give details on safety points with respect to waste dump areas, which you would give to:

- (a) truck drivers **4 marks**  
(b) dozer operators **5 marks**

In addition:

- (c) list three reasons you would dump slightly uphill in establishing your waste dumps **3 marks**

**Question 4****12 marks**

With respect to a quarry explain the meaning of any six of the following terms using sketches where appropriate:

1. bench height
2. bench
3. berm
4. toe
5. face angle
6. inter-ramp slope angle
7. overall pit slope angle

**(2 marks each)****Question 5****12 marks**

- a) Use a diagram to describe how you would build a bund wall for abandoning an open pit mine. Consider the pit to be 60 metres deep of which the top 20 metres is in weathered material. Describe how you would calculate the correct position for the bund wall. **4 marks**
- b) What material would you use to build the bund wall and why? **4 marks**
- c) Moon-scaping is a technique used for waste pile rehabilitation. Prepare a brief sketch to describe the technique. **4 marks**

**Question 6****12 marks**

- a) Name four places where dust is generated in and around a mine. **2 marks**
- b). List five ways in which dust may be controlled and give one example of how each might be used **10 marks**

**Question 7****12 marks**

You have been informed by the Quarry Supervisor that a dump truck and a light vehicle have collided on the pit haul ramp. The vehicle driver appears to be seriously injured and trapped. As Quarry Manager what course of action would you take?

(Note: Detailed description of the rescue is not required in the answer)

**Question 8**

**12 marks**

You are the newly appointed manager of a local quarry. The General Manager of the company has dismissed your predecessor for comments to the affect that "if the town's residents can't stand the noise living next to a quarry they should move out of town or wear ear plugs. This quarry supports the town and the locals shouldn't forget it".

You have just received three long-term compensation claims for hearing loss from ex-employees. Many genuine complaints are being received daily from neighbours about the noise generated from the quarry. The General Manager asks for a report on these claims and complaints. Write a letter to the General Manager explaining the reasons for the problems and the steps you would take to rectify them. Clearly identify likely sources of noise in the plant and in the open pit.

**END OF PAPER**