

CANDIDATE EXAM PAPER

CANDIDATE NUMBER: _____

DEP – Coal mining practice and legislation

DEPUTY OF UNDERGROUND COAL MINES

EXAMINATION FOR CERTIFICATE OF COMPETENCE

Work Health and Safety (Mines and Petroleum Sites) Act 2013
Work Health and Safety (Mines and Petroleum Sites) Regulation 2022

Legislation to be assessed:

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

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 2022

Explosives Act 2003

Explosives Regulation 2013

This Examination is held in the following location:

Region: New South Wales

Venue: Tocal College

Room: The Hall

Start date/time: 24 May 2023 09:50:00

DEP – Coal mining practice and legislation

INSTRUCTIONS TO CANDIDATES

DEP – Coal mining practice and legislation | May-2023

Q #	Marks	Available Marks	Marked by <i>Initials</i>	Summary comments to justify
1		10		
2		10		
3		10		
4		10		
5		10		
6		10		
7		10		
8		10		
9		10		
10		10		
Paper Total		100		<i>Marks checked by:</i>

EXAM BOOKLET

Answers are to be written in the allocated spaces
within this booklet ONLY

Answers must be written in pen however,
drawings may be completed in pencil

This booklet is not to be altered in any way,
pages are not to be added or removed

Additional space is provided at the end of the paper.

Please label which question the answer relates to.

Question 1

A. WHS (M&PS) Act 2013 Section 17 – Duty to preserve incident sites

Sud-section (3) lists 5 reasons when a scene can be disturbed.

List each reason:

1)

2)

3)

4)

5)

/5

B. From the following list mark the incidents that appear in WHS (M&PS) Regs 2022 Section 190 Dangerous Incidents. (5) marks

- An uncontrolled escape of a pressurised substance.
- A failure of ground support where persons could potentially have been present.
- An unplanned event that causes less than 2 exits from an underground mine to be available for use.
- Spontaneous Combustion at a coal mine.
- A collision involving a vehicle or mobile plant.
- An electric shock to a person, other than a shock from an extra low voltage source.

- An electric arc occurring in a hazardous zone at an underground coal mine that is directly observed or that leaves visible evidence on an electric cable.
- The detection of a concentration of methane in the general body of the air at an underground coal mine that is greater than 2% by volume.
- The inrush of water, mud or gas in workings at an underground excavation or tunnel.
- The burial of machinery such that it cannot be recovered under its own tractive effort.

/5

Question 2

You are the Weekend Night Shift Deputy, in a very productive Place Change panel. On Saturday night, due to minimal person underground there is no Undermanager on shift.

You are required to set up / mark up a new set of 90% “breakaway sights”.

The Mine doesn't have any lasers available.

With the aid of a sketch or sketches explain how you would achieve this.

Question 3

A. WHS (M&PS) Regs 2022 Schedule 10, Part 2 (10) refers to the Statutory Functions of a Deputy at an underground coal mine. What do (1) & (2) state? (2 marks)

B. WHS(M&PS) Regs 2022 Section 74 – Ventilation (3) (b) refers to where persons work or travel & 1 or more diesel engines are in operation the average volume of air measured across the work or travel area is required to be the greater of what? (2 marks)

C. WHS(M&PS) Regs 2022 Section 68 – Coal dust explosion (1) (c) refers to the percentage of incombustible material contained in roadway dust. What are the percentages for the following areas? (2 marks)

- A panel roadway within 200m outbye the last completed line of cut-throughs.

- A 200m section of panel roadway within 400m of a longwall face.

- In a return airway that isn't in a panel.

- In an intake airway that isn't in a panel.

D. WHS(M&PS) Regs 2022 Section 46 – Operation of belt conveyors (2) (d) refers to inspections by a competent person of each underground belt conveyor. What are those 2 x inspections? (2 marks)

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E. WHS(M&PS) Regs 2022 Section 55 – The mine operator of an underground mine, which has an area of unsupported ground or strata that is required to be supported to ensure compliance with section 14, must ensure 3 requirements are met. What are 2 of the 3 points requirements that must be ensured? (2 marks)

- _____

- _____

/10

Question 4

Complete the Gas Chart below.

Gas	Chemical Symbol	Relative Density	Legal Limits	Effects of Humans
Oxygen				
Carbon Dioxide				
Carbon Monoxide				
Methane				
Hydrogen Sulphide				

Question 5

You are the only Deputy on site and responsible for the safe repowering of a small board and pillar operation with 4 other operators, 1 Electrician and 1 Mechanical Fitter. Your shift commences at 11pm Sunday night.

Prior to the shift start at 10:30PM you are advised by your Control Room Operator that the collar pressure of the Main Fan (running across the weekend) has dropped 400 Pascals to 60% of its normal operating mine pressure.

Gas levels remain in 'normal range' throughout the mine with the ventilation reduction.

A. What steps would you take ensure the mine is not entered? (2 marks)

B. What steps would you take investigate the potential cause of the ventilation reduction? (2 marks)

C. What do you think the likely contributors to the issue could be? (2 marks)

D. What steps will you take to safely enter the mine and rectify the ventilation reduction? (2 marks)

E. What investigation steps will you take to record the incident? (2 marks)

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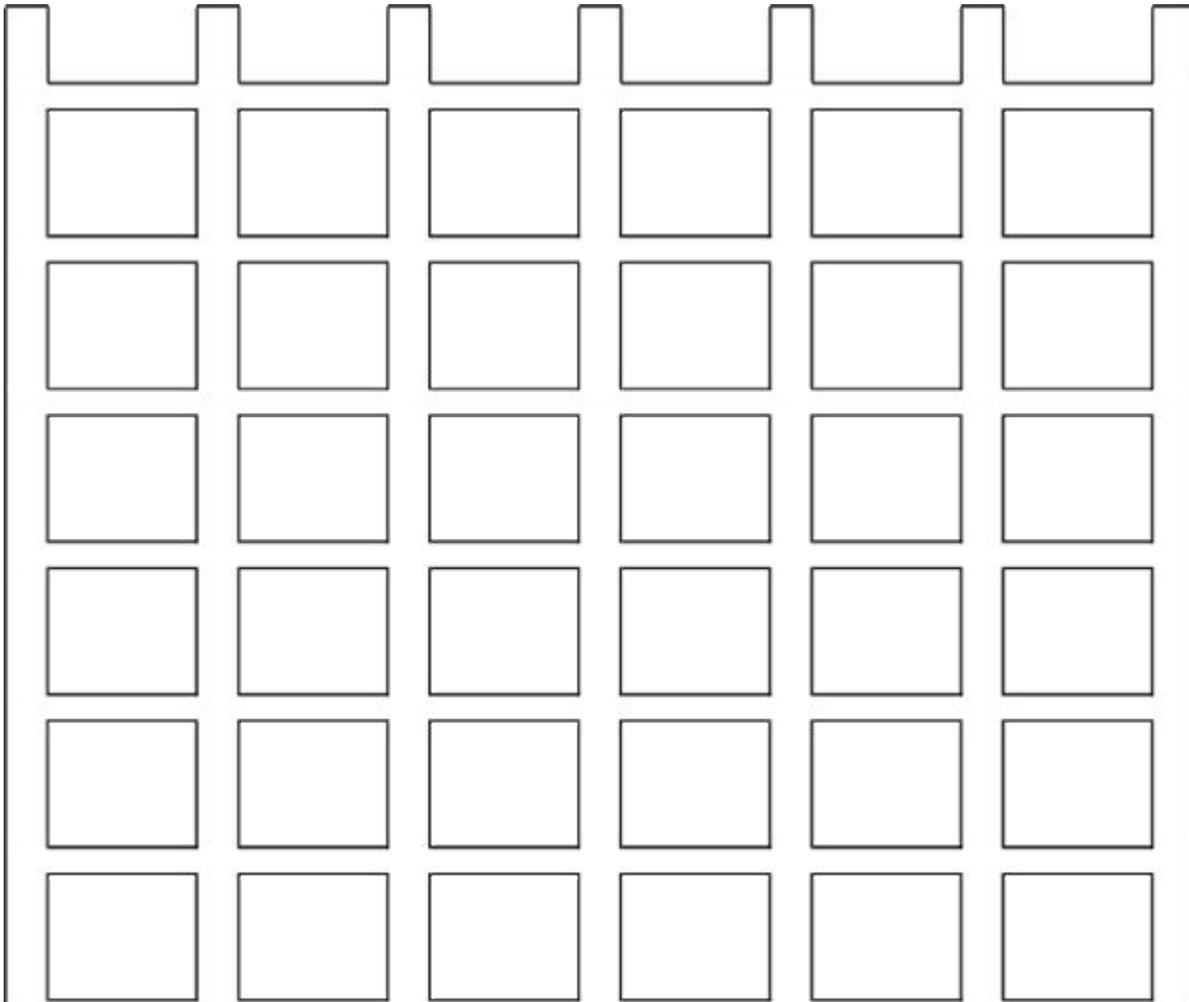
Question 6

You are the Deputy in charge of a longwall panel where shot firing activities are occurring at the Maingate end to reduce the size of a large rock jammed in the corner of the Armoured Face Conveyor (AFC) and Beam Stage Loader (BSL).

The rock is approximately 2 metres x 3 metres x 1.5 metres. The 3-metre side is accessible from the walkway.

Please explain the process you would take to safely and efficiently handle the resizing of the rock to resume production.

Question 7



You are a Deputy in charge of a 7 heading, 2 x Continuous Miner (CM) layout constructing a standard bord and pillar design with 30m x 30m centre's.

On the plan above, please identify the location or placement of the following:

Gate End Box	Travel road
Fire Fighting locations and type	Intake and Returns
Ventilation type	Hazardous Zone
Boot end and conveyor position	Face Zone
Production District	Explosion Suppression Barriers locations and type
CM positions and Shuttle Car positions (best efficiency to service 2 x CM's)	

Question 8

A. Briefly explain how a ventilation survey should be completed during development mining to ensure legislative compliance. (4 marks)

B. Complete the following ventilation calculation (3 marks)

Roadway width = 5.5m

Roadway height = 3.2m

Velocity = 2.5m/s

C. Work Health and Safety (Mines and Petroleum Sites) Regulation 2022, Section 74 refers to Ventilation.

What is the minimum quantity required to operate a diesel engine with a maximum output capacity of 80kW. Show calculations as necessary. (3 marks)

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Question 9

You are the Deputy in a Main Headings development panel with 6 headings. The panel is set up with 2 x Continuous Miners, 3 x Shuttle Cars and ventilated by 2 x Auxiliary Fans. During a production shift there is a gas ignition at 1 of the Continuous Miners that is being assisted by 2 x Shuttle cars at the time of the incident. The heading is approximately 25m from the cut through.

A. Explain your immediate actions after the ignition. (5 marks)

B. Explain what activities would be done, if any with the other Continuous Miner. (2 marks)

C. What could have been the reasons for the gas ignition. (3 marks)

/10

Question 10

You are the Deputy in a “Place Change / Cut Flit” production panel.

A. List the 6 top hazards. (3 marks)

B. Explain how each hazard is controlled. (7 marks)

/10

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