Deputy of underground coal mines
DEP – Coal mining practice and legislation

Candidate no.: _____

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*

Exam details

Region: New South Wales
Venue: Tocal College
Room: The Hall & North Court
Start date/time: Wednesday 14 May 2025 9:50am
End date/time: Wednesday 14 May 2025 12:30pm
Duration: 02:40

Instructions to candidates

- A HIGHLIGHTER ONLY (no pencil/pen) can be used during reading time
- 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.
- All 10 (ten) questions are to be attempted
- All questions are of equal value - 10 (ten) marks each

Marking Sheet

Candidate no.: _____

Question Number		Mark	Available mark	Marked by *Name*	Summary comments to justify, as necessary
1	A i		3		
	A ii		2		
	B		2		
	C		3		
	Subtotal		**10**		
2	A		2		
	B		6		
	C		2		
	Subtotal		**10**		
3	A		4		
	B i		1		
	B ii		5		
	Subtotal		**10**		
4	A		2		
	B		3		
	C		2		
	D i		0.5		
	D ii		1		

Question Number		Mark	Available mark	Marked by *Name*	Summary comments to justify, as necessary
	D iii		0.5		
	E		1		
	Subtotal		**10**		
5	A		1		
	B		4		
	C		1		
	D		4		
	Subtotal		**10**		
6	A		6		
	B		2		
	C		2		
	Subtotal		**10**		
7	A		2		
	B		5		
	C		3		
	Subtotal		**10**		
8	A		6		
	B		2		
	C i		1		
	C ii		1		
	Subtotal		**10**		
9	A		2		
	B		1		

Question Number		Mark	Available mark	Marked by *Name*	Summary comments to justify, as necessary
	C		2		
	D 1		3		
	D 2		2		
	Subtotal		**10**		
10	A		2		
	B		6		
	C		2		
	Subtotal		**10**		
PAPER	**TOTAL**		**100**		*Marks checked by:*

Question 1

(Total 10 marks)

A)

i) Section 31 WHS(MPS) Regulations 2022 refers to communication between outgoing and incoming shifts, what responsibilities does the outgoing mining supervisor have? List and briefly explain at least 3 (three) items. **(3 marks)**

ii) As the mining supervisor of the incoming shift, what 2 (two) things are you required to do? **(2 marks)**

B) Section 41 WHS(MPS) Regulations 2022 refers to exposure standards for dust and diesel particulate matter and carbon dioxide not exceeded. What is the 8-hour time weighted average exposure levels in an underground coal mine for the following **(2 marks)**

Respirable dust

Inhalable dust

Diesel particulate matter

Carbon dioxide

C) Section 88 WHS(MPS) Regulations 2022 refers to the inspection plan.

What are the frequencies for inspections in places other than production areas? **(3 marks)**

Question 2

(Total 10 marks)

During your first inspection of the production face, you had identified that the roof support installed on the previous shift for approximately 15m back from the face does not comply with the approved support plan for this area. The outside bolts of the 4-bolt pattern have been installed too close to the rib line and at a distance exceeding the tolerance on the support plan.

A) What action should the deputy take relative to this finding? **(2 marks)**

B) List and briefly explain 3 (three) potential causes for how this support could have been installed incorrectly for 15m. For each potential cause, outline the corrective actions the deputy should take to address. **(6 marks)**

C) What information needs to be communicated relative to this event and to who? **(2 marks)**

Question 3

(Total 10 marks)

A) The WHS(MPS) Regulations 2022 defines what a hazardous zone is. Explain this definition **(4 marks)**

B) You are an outbye deputy responsible for supervising underground hot works on a continuous miner that has been ***relocated*** to approximately 500m ***outbye of*** the production area.

i) Is there a requirement for a high-risk activity notification for this work to occur? **(1 mark)**

ii) List and briefly describe the control measures that should be implemented prior to this work commencing. **(5 marks)**

Question 4

(Total 10 marks)

A) Schedule 10 WHS(MPS) Regulations 2022 refers to the statutory function of a deputy, what is this? **(2 marks)**

B) List 6 dangerous incidents ***from WHS(MPS) Regulations 2022*** **(3 marks)**

C) List 4 high potential incidents ***from WHS(MPS) Regulations 2022*** **(2 marks)**

D) Regarding dangerous incidents, what mandatory requirements are there relating to the following:

i) Notification time: **(0.5 marks)**

---

ii) Who must be notified: **(1 mark)**

---

iii) Incident scene: **(0.5 marks)**

E) Circle two (2) correct statements below: **(1 mark)**

A high potential incident scene does need to be preserved.

A high potential incident scene does not need to be preserved.

An incident scene can be disturbed to assist an injured person.

An incident scene cannot be disturbed to assist an injured person.

Question 5

(Total 10 marks)

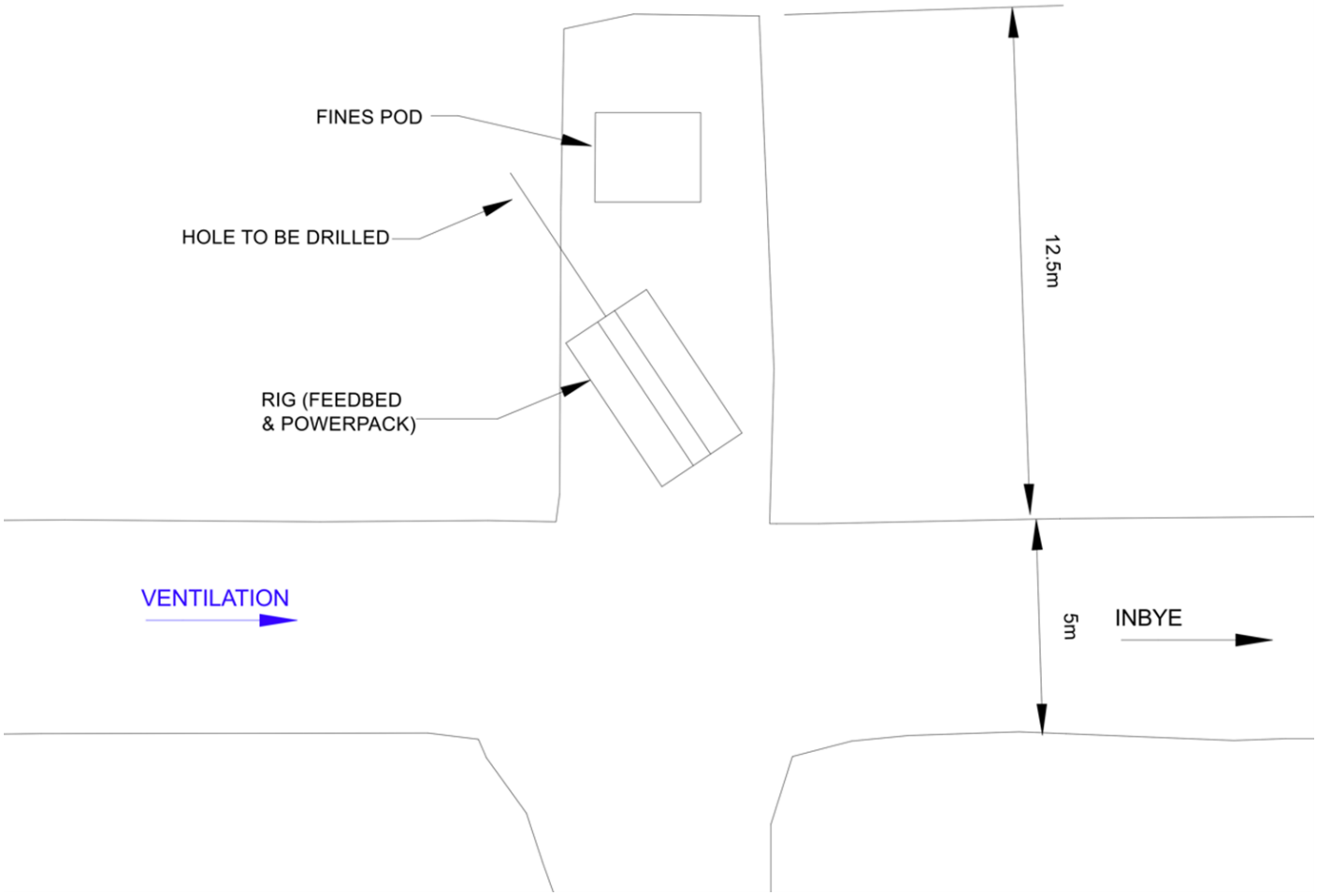
You are an outbye deputy who has responsibility for managing several workgroups in the outbye areas of ***the*** mine. One of these workgroups includes gas drainage drillers, who need to setup a new gas drainage stub in the current 2 heading gateroad development panel to drill and drain the area ahead of the next gateroad. The production area for the gateroad development panel is inbye, starting approximately 4x pillars inbye the drill site. The site will have 12 inseam holes drilled from the face of the gas drainage stub.

The gas drainage equipment in use at ***the*** mine includes a track mounted horizontal drill rig that incorporates the feed bed and flameproof power pack, CHD drill rods, a gas/water separator, and a fines bin. There is a DCB that will supply 1000V power to the rig one pillar outbye. The mine utilised 450mm diameter pipes in the gateroads to reticulate gas to the surface under vacuum, with the vacuum being supplied by a surface gas drainage plant.

The insitu gas content varies between 16 and 20m^3/t and the composition varies between 85% to 95% methane (with the balance being predominantly carbon dioxide).

A) What is the maximum general body methane concentration that would be acceptable in the gas drainage stub and in the gateroad around the location of the stub? **(1 mark)**

B) On the sketch below, the position of the rig (feed frame and power pack) and the fines pod is shown. Show how ***the deputy*** would expect the rest of the stub to be setup, showing location of rod trailer, gas/water separator, ventilation devices (brattice, venturis etc), gas monitoring devices (nominate any trip levels), gas drainage suction pipes, hosing, water traps, and any signage and/or barricading associated with the site. **(4 marks)**



C) Referring to the stub setup sketched above, how would ***the deputy*** control the risks associated with the drillers operating on the travel road for the inbye development panel – identify at least 3 (three) controls. **(1 mark)**

D) About 2 weeks later, when you are inspecting the site while drilling is underway, the drillers have reported that the collar of the hole they are drilling has become pressurised, and methane is starting to leak into the general body of the stub. The control room operator confirms that the gas drainage plant is still running. List 2 potential causes of the hole becoming pressurised at the standpipe. Describe what investigation ***the deputy should*** conduct to determine if that were indeed the cause, and what ***the deputy*** would do to rectify if it were found to be the cause. **(4 marks)**

Cause	Investigation	Rectification

Question 6

(Total 10 marks)

You are a deputy working on a production shift in a longwall panel. Methane is steadily rising in the tailgate from general body levels of 0.5% to around 0.9% over the course of the shift (3 hours so far).

A) What are 3 (three) likely causes for this increase, and what appropriate control measures does the deputy have to address this? **(6 marks)**

B) Calculate the following:

50m3/s ventilation quantity in the tailgate, 0.6% CH4 general body. What is the litres/second gas make? Show calculations **(2 marks)**

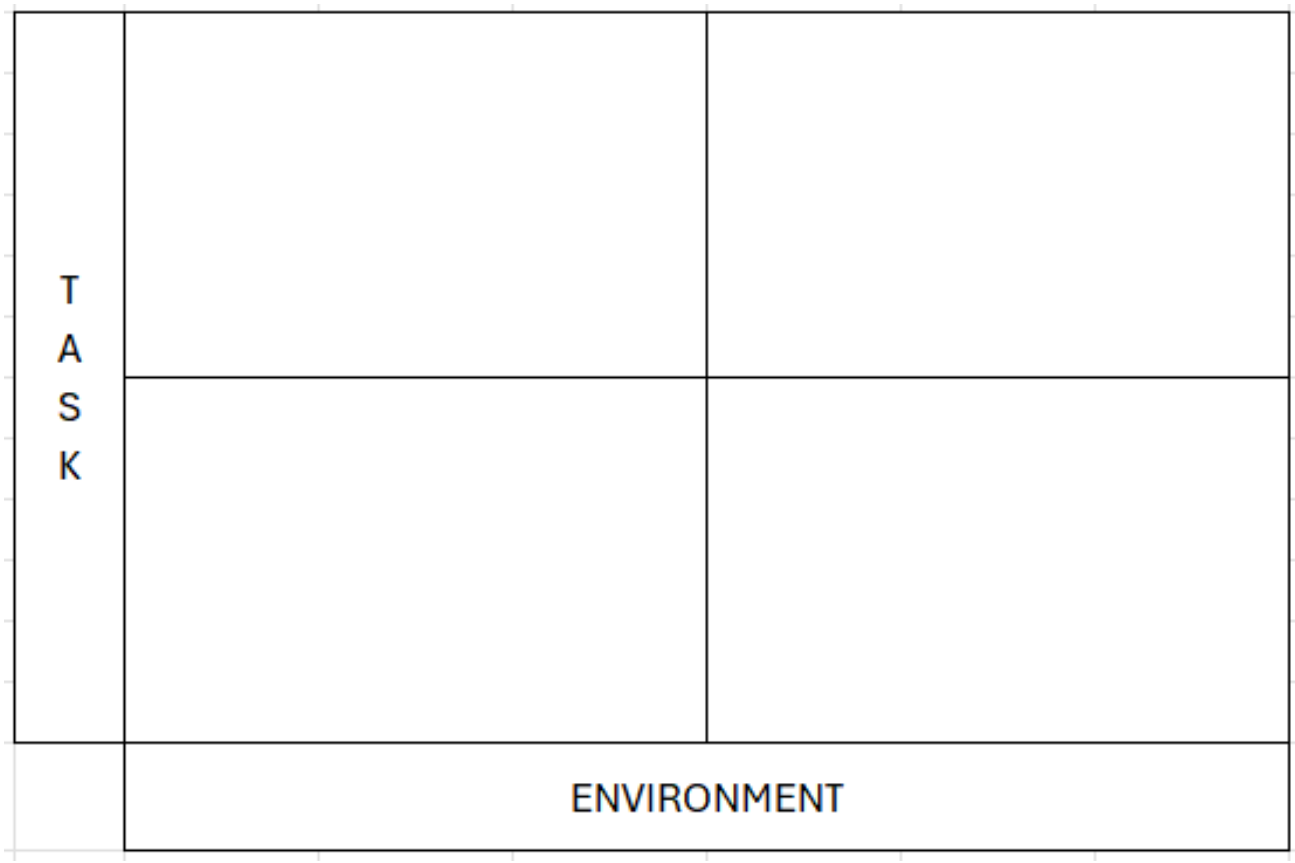
C) 220litres/second of CH4 converted into 0.5% general body reading, what is the ventilation quantity in the roadway? Show calculations **(2 marks)**

Question 7

(Total 10 marks)

A) As a deputy, you are responsible for several risk management practices. **(2 marks)**

Fill in the table below using the widely adopted industry risk matrix. Your response should include task frequency (routine/non-routine), environment considerations, and 'generalized' type of risk assessment relating to each quadrant.



B) Clause 36 of the WHS Regulations 2017 refers to hierarchy of control measures. This clause applies if it is not reasonably practicable for a duty holder to eliminate risks to health and safety.

You are a deputy conducting an inspection on a workgroup who are performing conveyor maintenance at the loop take up area of an outbye conveyor.

List and provide 1 (one) example for each of the remaining hierarchy of controls relating to the work being inspected. **(5 marks: 0.5 for each correct hierarchy, 0.5 for each appropriate response)**

C) Clause 37 of the WHS Regulations 2017 refers to maintenance of control measures. What are the 3 requirements of this clause? **(3 marks)**

Question 8

(Total 10 marks)

A) Complete the following gas chart **(6 marks)**

Chemical name	Chemical symbol	Relative density to air	Flammable limit
Hydrogen			
Methane			
Carbon Monoxide			
Nitrogen			
Oxygen			
Hydrogen Sulfide			
Carbon Dioxide			
Nitrogen Dioxide			

B) What are the approximate weightings of gases that make up air? **(2 marks)**

C)

i) Briefly explain the impact of unsafe levels of carbon monoxide on the blood in a person. **(1 mark)**

ii) When referring to underground coal mine gases, what does COT stand for? **(1 mark)**

Question 9

(Total 10 marks)

A) Complete the sentence.

Section 76 of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022 is Control and monitoring of methane levels and states the following;

The mine operator of an underground coal mine must, in addition to complying with section 58(1), ensure the ventilation system for the mine provides for air that is of sufficient quality to ensure the general body of air in the areas in which persons work, or travel has a concentration of methane that - **(2 marks)**

B) Complete the sentence.

The mine operator of an underground coal mine must ensure an internal combustion engine that operates in a return airway is equipped with a continuous methane monitor that gives an audible or visible alarm when the concentration of methane in the general body of the air is – **(1 mark)**

C) As a deputy supervising work in the return roadway with a diesel powered LHD, what actions must be taken when the following levels of methane are detected in the operating areas of the diesel plant: **(2 marks)**

i) 1% methane

ii) 1.25% methane

D) As the deputy in a development panel, you are conducting a production face inspection during a production shift. Briefly explain:

1) what would happen to the continuous miner in response to the following triggers being registered by the onboard continuous methane monitoring system: **(3 marks)**

i) 1% methane detected in the general body of air

ii) 1.25% methane in the general body of air

iii) 2% methane is detected at the methane monitor installed at or close to the heads of the face machine

2) When conducting inspections of the continuous methane monitor arrangements on the continuous miner, what are two critical inspections? **(2 marks)**

Question 10

(Total 10 marks)

You are an allocated deputy within the longwall panel on production. The seam is moderately gassy with CH4 being the main source of liberated gas. Over several shears, there have been a slight increase in CH4 at the TG Drive monitors. While you're at the crib room, you received a phone call from the face with the operator telling you that there has been a gas trip at the TG when the shearer was mining into the TG.

A) Describe the immediate actions the deputy should take. **(2 marks)**

B) How should this be investigated by the deputy to determine the likely cause? **(6 marks)**

C) What reporting requirements must be completed because of this event? **(2 marks)**

Blank Page

Blank Page

End of Document