Examiner report

NSW RESOURCES REGULATOR

Electrical engineer of coal mines other than underground

Examiners' report November 2018

Written examination

CEE3 – Legislation and standards applicable to surface coal mines

Summary of results and general comments

Exam date:	2 August 2018
Number of candidates:	4
Number who passed:	3
Highest mark:	68.75%
Average mark:	58.86%
Lowest mark:	48.27%

Question 1 (total 10 marks)

Highest mark:	10
Average mark:	6.75
Lowest mark:	2

Examiners' comments - Bowtie risk analysis and critical control identification have become prominent within the mining industry as a pathway to identifying those controls that have most impact on preventing rare but catastrophic unwanted events. Candidates who had familiarised themselves with the processes were well versed with the terminology and definitions. All candidates however, should be familiar with the controls to prevent electric shock. However, many candidates failed to apply the hierarchy of controls and were reliant upon procedures, permits and labelling.

Question 2 (total 10 marks)

Highest mark:	10
Average mark:	8.25
Lowest mark:	5

Examiners' comments – There was a good understanding of this question regarding poor standards and the process to be followed in the short and longer terms with respect to getting the site back into compliance, which showed in the marks being awarded.

Question 3 (total 10 marks)

Highest mark 10

Average mark: 6.63

Lowest mark: 3

Examiners' comments - There was a wide variety of answers to this question which is surprising for a voltage regulation question. A number of applicants showed that they were not sure what voltage regulation really means and how it affects the operation of machines. This is an operational area where applicants need to review with their site senior engineers, to grasp the understanding, as these issues can be evident in any operation.

Question 4 (total 10 marks)

Highest mark: 9.5

Average mark: 6.88

Lowest mark: 5

Examiners' comments – The candidates in general had a good understanding of the requirements and process to be followed in the event of an electric shock incident and how to manage the situation. The candidates who gave more detail and answered the specific questions were rewarded for their effort.

Question 5 (total 10 marks)

Highest mark: 10

Average mark: 8.25

Lowest mark: 6

Examiners' comments – Candidates should have demonstrated a systematic approach using appropriate hazard identification tools and referencing readily accessible industry data and guidance material. Candidates who scored well demonstrated their engineering knowledge by itemising potential issues that would need to be addressed prior to the introduction of the plant to site.

Question 6 (total 10 marks)

Highest mark: 9

Average mark: 7

Lowest mark: 2.5

Examiners' comments – Only a minority of the candidates did not have a grasp on how to perform basic fault level calculations – these questions have been part of the examination process for many years and have not been answered well. This question was a similar question to previous years which indicated some candidates have not been through the past papers and put an effort into understanding these types of scenarios that are part of mine electrical engineers' roles.

Question 7 (total 10 marks)

Highest mark: 8

Average mark: 4.25

Lowest mark: 0.5

Examiners' comments – This question was poorly answered by the majority of candidates in relation to the process to be followed for the introduction of new or unknown technology into a typical coal operation. This process including design and operational risk assessments along with careful specification and software management is an area that is becoming more readily available and candidates need to understand these requirements for typical installations in the future.

Question 8 (total 10 marks)

Highest mark: 7.5

Average mark: 5.88

Lowest mark: 4

Examiners' comments - The candidates failed to understand typical electrical installations in regards to getting a power supply to a new pumping installation. This question was developed for typical surface installations where the mine electrical engineer is responsible for all these installations. AS3007 clearly states requirements for clearances and sign posting of overhead power lines. The marks reflected the answers provided for the understanding provided by the candidates.

Question 9 (total 10 marks)

Highest mark: 5.5

Average mark: 4.75

Lowest mark: 3.5

Examiners' comments – This question again highlighted the poor understanding of candidates in relation to the critical safety application with relation to electrical protection and the importance of its application on a typical mine site.

Question 10 (total 10 marks)

Highest mark: 10

Average mark: 8.5

Lowest mark: 6

Examiners' comments – The candidates showed a good understanding of an electric shock incident on a portable electrical tool and the management of such an incident.

Question 11 (total 10 marks)

Highest mark: 9.5

Average mark: 8.13

Lowest mark: 7

Examiners' comments – The candidates had a good understanding of the electrical standards required on a typical haul truck and what systems need to be in place to manage non-conformances and ongoing maintenance issues.

Question 12 (total 10 marks)

Highest mark: 10

Average mark: 9.5

Lowest mark: 8.5

Examiners' comments – The candidates showed good understanding of the legislative requirements which was reflected in the marks obtained.

Oral examination

Date: 11 October 2018

Number of candidates: 3

Number deemed competent: 1

General comments

The candidates were generally very nervous throughout the assessment and struggled to answer the required questions without putting themselves under extreme pressure. It was clear that the person who had prepared best and was able to keep their nerves under control was generally assessed as 'competent'.

Some candidates struggled with some basic scenarios provided by overthinking the question at hand and not being able to provide the required information. If the site's control plans and SEPs were clearly understood from a technical and practical perspective, then the confidence in answering the questions would be more easily expressed.

More information

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Resources Regulator

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Acknowledgments

Electrical engineer examination panel

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