

EXAMINERS REPORT | CERTIFICATE OF COMPETENCE

Electrical engineering manager of underground coal mines

August 2016

Summary of written results

Date: 1 August 2016

Number who passed: 4 out of 5

CEE1 – Application of electrical engineering to mining

Highest mark: 80%

Average mark: 68%

Lowest mark: 60%

Question 1 (total of 10 marks)

Highest mark 8/10

Average mark: 5.5/10

Lowest mark: 3/10

Examiner Comments

Functional safety has been around for a number of years; candidates need to have a workable understanding of the processes involved, the people who should be involved and what should take place when changes are required to be made.

Question 2 (total 10 marks)

Highest mark: 10/10

Average mark: 8/10

Lowest mark: 5/10

Examiner Comments

Contractor Management and Equipment Acceptance to site are two critical management plans for a mine site. These are repeat questions which should be easy to explain however we still have candidates not understanding the concept. Most people passed this question.

Question 3 (total 10 marks)

Highest mark: 8/10

Average mark: 7/10

Lowest mark: 5.5/10

Examiner Comments

Management of Ex Plant is a key component of the role of the Electrical Engineering Manager. From time to time major damage does occur to Exd enclosures. The Electrical Engineering Manager should have a very high level of understanding of the full life cycle management. This question had a mixed response of answers.

Question 4 (total 10 marks)

Highest mark: 10/10

Average mark: 9.5/10

Lowest mark: 9/10

Examiners Comments

The requirements of the *Work Health and Safety Act* were well understood and candidates scored highly in this question.

Question 5 (total 10 marks)

Highest mark: 8/10

Average mark: 7/10

Lowest mark: 6/10

Examiners Comments

The requirements of AS3800 were well understood. Candidates scored higher than average marks.

Question 6 (total 10 marks)

Highest mark: 6/10

Average mark: 3.5/10

Lowest mark: 2/10

Examiners Comments

Candidates still struggle with the fundamental principle of fault level and protection processes. The calculation of fault currents and impedances is critical to Electrical Engineering practices.

CEE2 – Legislation and standards applicable to underground coal mines

Highest mark: 69%

Average mark: 63%

Lowest mark: 54%

Question 1 (total 10 marks)

Highest mark: 8/10

Average mark: 6.5/10

Lowest mark: 5/10

Examiners Comments

The understanding of Ex Principles is critical to the role of Electrical Engineering Manager. Candidates are expected to have a very high level of knowledge and therefore the question was marked accordingly.

Question 2 (total 10 marks)

Highest mark: 8/10

Average mark: 5.5/10

Lowest mark: 2/10

Examiners Comments

Management of change is a process which every operation must manage, but is generally not understood clearly.

The question was handled reasonably well but most candidates did not know where legislation identified the requirement. The flow chart was handled well.

Question 3 (total 10 marks)

Highest mark: 10/10

Average mark: 9 /10

Lowest mark: 8.5/10

Examiners Comments

Candidates had no trouble with the legislation requirements. The question scored highly.

Question 4 (total 10 marks)

Highest mark: 9/10

Average mark: 7.25/10

Lowest mark: 6/10

Examiners Comments

Arc fault protection and management is an area which has been ignored for quite a while, but is a critical failure in our industry.

The “Action Plan” was handled reasonably well.

The memo to the manager needed to be handled better. Most candidates did not present their answer from the prospective of the Electrical Engineering Manager position and just recited in point form.

The Personal Protective Equipment (PPE) question was not understood very well at all.

Question 5 (total 10 marks)

Highest mark 7.5/10

Average mark: 6/10

Lowest mark: 4.5/10

Examiners Comments

This question was based around AS2290 with some candidates doing really well in the marks.

Question 6 (total 10 marks)

Highest mark: 10/10

Average mark: 9.5/10

Lowest mark: 8/10

Examiners Comments

This cable question was expected to be answered well. While answers mostly met expectations there are still candidates who do not understand the design concept of mining cables.

Question 7 (total 10 marks)

Highest mark: 6/10

Average mark: 4/10

Lowest mark: 0/10

Examiners Comments

This question was based around the requirements of AS3010 and EES014 in regards to generator installations. The drawings were not always correct and candidates didn't understand the requirements where temporary boards are being supplied with reference to the earth system interfaces.

Question 8 (total 10 marks)

Highest mark: 9.5/10

Average mark: 8.5/10

Lowest mark: 5.5/10

Examiners Comments

Candidates had a fair understanding of the legislation requirements and were received high marks for this question.

Question 9 (total 10 marks)

Highest mark: 8/10

Average mark: 3.25/10

Lowest mark: 0/10

Examiners Comments

Candidates should be aware on how to undertake basic full load current calculations. These type of questions have appeared previously and should be better understood if past papers were attempted.

Question 10 (total 10 marks)

Highest mark: 6/10

Average mark: 5/10

Lowest mark: 4/10

Examiners Comments

Candidates did not have a thorough understanding of the requirements of AS3007 to enable a clear answer to be provided.

Question 11 (total 10 marks)

Highest mark: 6/10

Average mark: 3.25/10

Lowest mark: 0/10

Examiners Comments

Candidates did not provide an adequate understanding of the substation earthing requirements. These included the connection and coordination between HV and lightning earths.

Construction requirements were not well addressed in regards to depths, typical dimensions or testing requirements.

Question 12 (total 10 marks)

Highest mark: 9/10

Average mark: 7.5/10

Lowest mark: 6/10

Examiners Comments

Candidates scored higher than average for this question as it is fundamental in the role in an underground operation.

Summary of oral results

Date: 22 September 2016

Number of candidates: 6

Number deemed competent: 2

Examiners Comments

The candidates struggled with the practical scenarios provided based on day to day electrical engineering issues faced by the Electrical Engineering Manager. This year the candidates were given three (3) main practical scenarios which included:

1. Generator Installations / Live testing requirements
2. Flameproof enclosure damage and repairs underground (Shuttle car)
3. 1000V DCB with 6 bolt holes out of spec dimensions in the pre overhaul audit

The questions drilled down into a number of scenarios out of the above topics. Candidates needed a thorough understanding of these requirements along with knowledge in how to deal with these scenarios within the guidance of legislation and site standards.

Not all candidates could provide an understanding on how the respective legislation, standards and practical aspects, detailed in the above questions, could be effectively managed.

More information

NSW Department of Industry

Governance Branch

Mining Competence Team

T: 02 4931 6625

Email: minesafety.competence@industry.nsw.gov.au

Acknowledgments

Electrical Engineering Manager Examination Panel

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