

EXAMINERS REPORT | CERTIFICATE OF COMPETENCE

# Electrical engineer of coal mines other than underground mines

November 2017

## Written examination

### Summary of results

Date:	6 July 2017
Number that sat	3
Number who passed:	3

### CEE3 – Legislation and standards applicable to surface coal mines

Highest mark:	79.5/120
Average mark:	75/120
Lowest mark:	72/120

#### Question 1 (total 10 marks)

Highest mark:	5.5/10
Average mark:	3/10
Lowest mark:	1/10

#### Examiner's comments

This question was produced because of the number of issues with portable buildings arriving on mine sites that are not set up in the same configuration as the mine supply.

Some candidates did not understand the earthing requirements and what would happen if you connected an IT and MEN system together.

There will be more questions in the future on this topic based on the poor understanding overall. There were only a small number of candidates that could draw an Isolation Transformer and some were lacking in detail due to poor understanding of how they work.

#### Question 2 (total 10 marks)

Highest mark:	8/10
Average mark:	6/10
Lowest mark:	5/10

#### Examiner's comments

This was a direct question from the requirements of AS3760. Again the candidates failed to answer the question in regards to what opportunities could be provided to the sites based on the standards requirements.

Many failed to answer the question in providing the operator with what can be done to remove some of the onerous testing requirements that may be in place at some operations.

Candidates did not provide any real detail or information giving the examiners any confidence that they understood the standard's requirements. Some of the tables drawn to indicate what frequencies would be used at their particular site were quite poor and lacking detail.

### Question 3 (total 10 marks)

Highest mark: 10/10

Average mark: 8/10

Lowest mark: 7/10

#### Examiner's comments

Generally a good understanding of the clause 32 requirements from one candidate. The remaining candidates provided answers that were not directly relevant to the questions.

Legislation is a fundamental requirement for an electrical engineer. Candidates should place a strong emphasis on knowing this information prior to sitting this exam.

### Question 4 (total 10 marks)

Highest mark: 6/10

Average mark: 5.5/10

Lowest mark: 5/10

#### Examiner's comments

Generally candidates did not fully grasp the AS3000 requirements for access around switchboards nor the way to conduct an earth continuity check on small pump 100 metres away – some of the drawings could not be understood and were marked accordingly.

### Question 5 (total 10 marks)

Highest mark: 8/10

Average mark: 7/10

Lowest mark: 5.5/10

#### Examiner's comments

Candidates did not have clear understanding on this question.

Contractor management was not always recognised. Electric shock was not seen as the highest risk by several candidates when it should be. Part c) on 'live testing' was handled well generally. Don't be afraid to discuss.

## Question 6 (total 10 marks)

Highest mark: 9.5/10

Average mark: 9/10

Lowest mark: 8.5/10

### Examiner's comments

This question was handled well by most candidates generally. Part c) on investigation focus was confusing for some and poorly answered. Candidates needed to be more direct with their point form details.

## Question 7 (total 10 marks)

Highest mark: 7.5/10

Average mark: 5.5/10

Lowest mark: 4.5/10

### Examiner's comments

The candidates had difficulty describing an isolation process for accessing the high voltage slip rings for a typical electric face shovel installation. The areas that were done poorly included not listing working earths as a requirement, failing to test the tester prior to and following the actual test for dead as well allowing personnel to close an earth switch onto a circuit that hadn't been tested.

## Question 8 (total 10 marks)

Highest mark: 8/10

Average mark: 6.5/10

Lowest mark: 6/10

### **Examiner's comments**

This calculation appeared last year in the same format with different values as it was poorly completed last year. This year was similar with the candidates not understanding the basic electrical protection techniques in relation to full load current and fault levels which are fundamental to an electrical engineer.

### **Question 9 (total 10 marks)**

Highest mark:	6/10
Average mark:	4.5/10
Lowest mark:	3.5/10

### **Examiner's comments**

This question was poorly answered with candidates not having a general understanding of specific requirements in relation to power restoration after a fault or trip on the reticulation system.

Some candidate's inexperience was evident through not demonstrating an understanding of this type of installation and opting to insulation test the aerial system. A similar question has been in past papers and is still not being answered satisfactorily.

### **Question 10 (total 10 marks)**

Highest mark:	10/10
Average mark:	10/10
Lowest mark:	10/10

### **Examiner's comments**

This question was understood quite well by all candidates. Some people overlooked the immediate environment focus and area due to placing too much emphasis on the checklist.

### **Question 11 (total 10 marks)**

Highest mark:	8/10
Average mark:	5.5/10
Lowest mark:	3.5/10

### **Examiner's comments**

The automotive requirements for mobile plant on the surface of the mine was again not fully understood especially with what the minimum standards would be as well as where the emergency stops are to be placed. The use of braided mechanical protection and the supporting of such harnesses were not well understood.

## Question 12 (total 10 marks)

Highest mark:	5/10
Average mark:	4.5/10
Lowest mark:	4/10

### Examiner's comments

The candidates were not all up to speed on how to apply for an exemption and what should be done at site level prior to even going down that path. There were some unrealistic time frames indicating the length of time it will take to get to the point of receiving an exemption which was from seven days through to 12 months.

## Oral examination

Date:	25 August 2017
Number of candidates:	3
Number competent:	1

## General comments

It is imperative that candidates listen to previous comments and feedback provided by examiners in relation to their knowledge base and the level of understanding required when answering oral questions. The oral exam places an emphasis on candidates answering all questions as if they are the electrical engineer in the role. Candidates were advised prior to the exam that no hints or prompting will be provided.

This round of assessments demonstrated that candidates are not adequately prepared to the level needed to fulfil the role prior to attempting the oral examination.