

# Mechanical engineering manager of underground coal mines

Examiners' report November 2017

## Written examination

### CME1 – Mechanical engineering practices applicable to underground coal mines

#### Summary of results and general comments

Exam date:	7 July 2017
Number of candidates:	6
Number who passed:	4
Highest mark:	69%
Average mark:	62%
Lowest mark:	47%

#### Question 1 (total of 60 marks)

Highest mark:	38/60
Average mark:	30/60
Lowest mark:	13/60

#### Examiner's comments

Challenged candidates' ability to interpret the personnel safety and mechanical failure aspects of an incident in a recent industry safety alert, and determine potential causes and control measures. It then asked candidates to identify recommendations that should be communicated to the industry.

In general, the potential causes were identified, but controls and recommendations were more systems based and did not identify the practical measures that can be applied to mitigate a reoccurrence.

#### Question 2 (total 60 marks)

Highest mark:	33/60
Average mark:	30.5/60
Lowest mark:	23/60

**Examiner's comments**

Fluid power management is one of the core responsibilities of the mechanical engineering manager. Candidates were required to understand the requirements of a comprehensive fluid power management plan, key hazards, and the associated controls for a safe work environment (design of equipment, competence of all personnel, and safe systems of work).

Candidates showed rudimentary understanding, but lacked a satisfactory depth of knowledge.

**Question 3 (total 60 marks)**

Highest mark: 49/60

Average mark: 36.5/60

Lowest mark: 25/60

**Examiner's comments**

Multiple choice question used to determine general knowledge of a number of topics. Question covered hot work, platforms/walkways/handrails, safeguarding of machinery, and reclaim tunnels.

Most candidates performed reasonably well.

**Question 4 (total 60 marks)**

Highest mark: 48/60

Average mark: 40.5/60

Lowest mark: 31/60

**Examiner's comments**

A short answer question in two parts:

Part A considered core mechanical knowledge relating to explosion protected diesel engine systems. Candidates demonstrated a reasonable understanding of DES requirements, and basic fault diagnosis.

Part B asked candidates to convert simple metric and imperial measurements, recognising that when underground these sometimes need to be known from memory. Candidates demonstrated a reasonable knowledge of units of measurement.

**Question 5 (total 60 marks)**

Highest mark: 58/60

Average mark: 49/60

Lowest mark: 40/60

**Examiner's comments**

Two candidates attempted question.

Mechanical engineering managers at underground coal mines often hold statutory responsibility for the coal handling and preparation plant. Question tested candidates understanding of the hazards and control measures associated with reclaim tunnels.

Candidates demonstrated a good understanding.

### Question 6 (total 60 marks)

Highest mark /60

Average mark: /60

Lowest mark: /60

#### Examiner's comments

No candidates attempted question.

### Question 7 (total 60 marks)

Highest mark 60/60

Average mark: 47/60

Lowest mark: 38/60

#### Examiner's comments

Four candidates attempted question.

Hot work management is one of the core responsibilities of the mechanical engineering manager. Candidates were required to understand the requirements of a comprehensive safe cutting and welding management plan, key hazards, and effective controls for a safe work environment.

Candidates demonstrated a good understanding.

### Question 8 (total 60 marks)

Highest mark /60

Average mark: /60

Lowest mark: /60

#### Examiner's comments

No candidates attempted question.

## CME2 – Legislation and standards applicable to underground coal mines

### Summary of written results

Exam date: 7 July 2017

Number of candidates: 7

Number who passed: 2

Highest mark: 67%

Average mark: 52%

Lowest mark: 28%

### Question 1 (total 20 marks)

Highest mark: 17/20

Average mark: 11.9/20

Lowest mark: 2/20

#### Examiner's comments

Question used a scenario to determine the candidates understanding of confined spaces and the applicable legislation.

Most candidates demonstrated a reasonable knowledge.

### Question 2 (total 20 marks)

Highest mark: 15/20

Average mark: 10.1/20

Lowest mark: 7/20

#### Examiner's comments

Question used a scenario to determine the candidates understanding of noise from machinery and the applicable legislation.

Majority of candidates demonstrated a satisfactory knowledge.

### Question 3 (total 20 marks)

Highest mark: 20/20

Average mark: 15/20

Lowest mark: 6.5/20

#### Examiner's comments

The *Mechanical Engineering Control Plan* is fundamental in the identification and management of mechanical hazards at the mine site.

In general, this question was answered well by the candidates.

### Question 4 (total 20 marks)

Highest mark: 14/20

Average mark: 7.4/20

Lowest mark: 0/20

#### Examiner's comments

Part A required an understanding of what items of mechanical plant require item and design registration for underground coal mines. In general, this part of the question was answered well by the candidates.

Part B sought an understanding of the legislative requirements in bringing various items of mechanical plant to the mine site. This part of the question was answered poorly.

## Question 5 (total 20 marks)

Highest mark: 16.5/20

Average mark: 7.1/20

Lowest mark: 0/20

### Examiner's comments

Candidates reviewed a gazettal notice relating to testing requirements of conveyor belting used in underground coal mines.

This question was generally poorly answered. This indicates either an inadequate understanding of the requirements of conveyor belt used in underground applications, or being the last question on the legislation exam, demonstrated poor time management by the candidates.

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