

## **Metal Mining II May 2015 Examiner Remarks**

### **General**

It seems as if candidates were well prepared. To those that passed, well done. To the others that missed it, don't stop now, this is a difficult subject...stick to it, you will pass soon enough.

### **Question 1**

This question was generally well answered by most students. Some students made the mistake of describing in detail the support types and systems as opposed to taking a holistic rock engineering approach to this type of ore body at this depth.

### **Question 2**

This question was not well answered. Most students failed to recognise that multiple sub-faults normally run parallel to a main fault. Some went into detail about support systems and rules to manage the mining, with little reference about direction of mining through such a fault.

### **Question 3**

This question was not answered comprehensively enough, although it only counted 5 marks. Students did not discuss the major factors like total stress, elastic convergence, geometry, maximum allowed convergence or extraction. Detailed descriptions were given of only one or two of these factors.

### **Question 4**

This question was poorly answered. These are basic definitions which should be properly understood. For example: Velocity means the rate of change of position, measured in m/s.

### **Question 5**

This was an easy question targeted to get you easy marks. Generally well answered by most students. Half a mark per fact.

### **Question 6**

An easy practical question which most students got right. Keeping the shaft stable and in tact in the beginning is the major risk mitigating factor for not extracting the shaft pillar at the early stages of mining.

### **Question 7**

This is a new question which does not come from past papers. Lots of students confused it with the typical underground refrigeration cycle. This question clearly indicated the surface water cooling installation. You had to make reference to the warm water reservoir, pre-cooling tower, evaporator with its back-pass valve and finally the chilled water reservoir which feeds chilled water under ground. Explaining the temperature differences in the cycle is key.

### **Question 8**

This was the question where most people failed. Very sad, because the exact formula was provided to you. You simply had to substitute the values and get to your first answer, which was half of the marks. Remember, the booster fan duty is at a pressure which is the difference between your calculated answer and the pressure drop over ABC.

### **Question 9**

This question had somewhat of a wide distribution in marks. Some people got full marks and others got very low marks. There are more than three ways of cooling air. Only 3 were asked. Examples include Surface Cooling; Underground Bulk Air Cooling; Underground Remote Cooling/Spot Cooling and Ice Jackets/Ice Plant cooling. You had to explain these, advantages/disadvantages etc.

### **Question 10**

A well answered question by most candidates. It is a repeat of a past paper with different values. My apologies for the typing error referring to 45 panels as opposed to the 72 panels. The candidates that responded to this ambiguity got a bonus mark. A common mistake was confusion when converting to South African Rands. Once you applied exchange rate and metal prices in US\$, your answer is in Rands, not US dollars. Congratulations to most of you who scored well in this question.

### **Question 11**

A general question to test your ability to manage a mine and to provide your COO with comfort that you know what you are doing. Most people got it right. Easy marks.