

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERAL RESOURCES
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 14th October 2010
TIME: 8:30 to 11:30

TOTAL MARKS: 100
TO PASS: 50

SURVEY 1

QUESTION 1

Frequent use and rough handling of the dumpy level may cause it to be out of adjustment. Describe, with the help of sketches where applicable, four adjustments required to correct a dumpy level.

[18]

QUESTION 2

A planimeter was used to find the area of an irregular figure drawn on a plan to a scale of 1:200. The planimeter reading was 5,376. A circle with a radius of 7,5cm was then traced using the same planimeter and a reading of 3,125 was obtained.

Calculate the area of the irregular figure to the nearest square metre.

[12]

QUESTION 3

Describe the following instruments:

- i. Gyro-theodolite
- ii. Transit-theodolite
- iii. Sextant
- iv. Digital planimeter
- v. Target

[15]

QUESTION 4

A circular water tank has an internal diameter of 5,247m and is 6,906m deep. It was drawn to a scale of 1:25.

What error would be made in calculating the volume of the tank in litres, if the drawing was incorrectly scaled with a scale of 1:18?

[10]

QUESTION 5

Describe the following terms

- i. Datum plane
- ii. Line of sight
- iii. Magnetic north
- iv. Back sight
- v. Grading

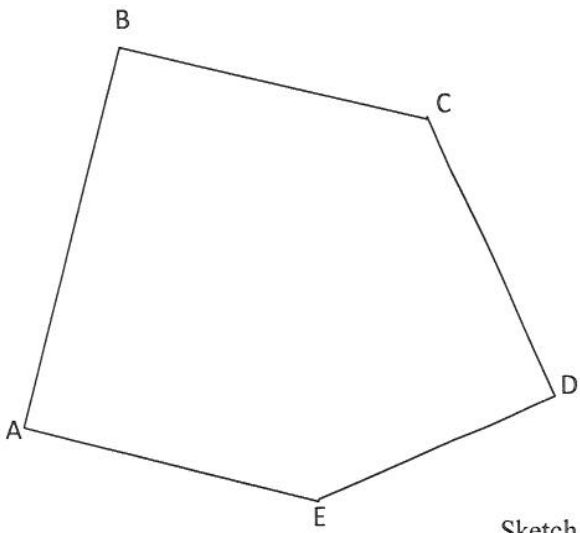
[12]

QUESTION 6

The rock from a conical waste dump is to be used to resurface a road to an average depth of 30cm throughout. The road is to be 8,5m wide. If the diameter of the base of the dump is 70,0m and the angle of repose of the waste rock is 33° , calculate the length of the road which can be resurfaced by all the rock from the conical dump.

[13]

QUESTION 7



Given the co-ordinate of an irregular figure ABCDE

Y	X
A + 8 255,000	+ 6 540,000
B + 8 375,000	+ 6 109,500
C + 8 285,500	+ 6 079,400
D + 8 110,450	+ 6 128,100
E + 8 076,100	+ 6 279,500

Calculate area by co-ordinates of figure ABCDE. Show all checks.

[20]

[TOTAL MARKS 100]