



mineral resources

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

# MINE SURVEYOR'S CERTIFICATE OF COMPETENCY EXAMINATION

## MINING ECONOMICS 1

DATE: 5 October 2016

TOTAL MARKS: 100  
TO PASS: 50

TIME ALLOWED: 3 HOURS  
(08h30 to 11h30)

### NOTE:

- This question paper consists of **FOUR** pages including cover page.
- All questions must be answered.
- All answers and sketches to be presented in a neat and decipherable manner. Papers will not be marked if not decipherable.
- Restrict the use of highlighters.
- Do not use a red pen.
- Read the instructions on the front page of your answer book carefully.
- No cellular phones shall be allowed in the examination venue.
- The use of computers, laptops and palmtops is prohibited.
- **All steps** and **CHECKS** must be done.
- The make and model number of your calculator must be written on the front cover of your answer book

### Question 1

- 1.1 What is the function of the sampling department? (6)
- 1.2 Name 6 factors that must be taken into consideration to work out the complement of samplers required for **Development** (7)
- 1.3 Name 6 factors that must be taken into consideration to work out the complement of samplers required for **Stoping** (6)
- 1.4 What is the fundamental principle of a representative sample? (6)

Total [25]

### Question 2

- 2.1 Define Pay Limit. (2)
- 2.2 What basic information is required to determine the pay limit (3)
- 2.3 The following information was extracted from the annual report of a Gold mine:

Price of Gold	R 2 550 /kg
Working costs (including development costs)	R 15,50 /t milled
Development costs	R 2,50 /t milled
Waste sorted	8 %
Value of waste sorted	0,80 g /t
Value of residue	0,35 g /t
Mine Call Factor	92,5 %

Calculate a pay limit giving reasons for including or excluding the cost of development.

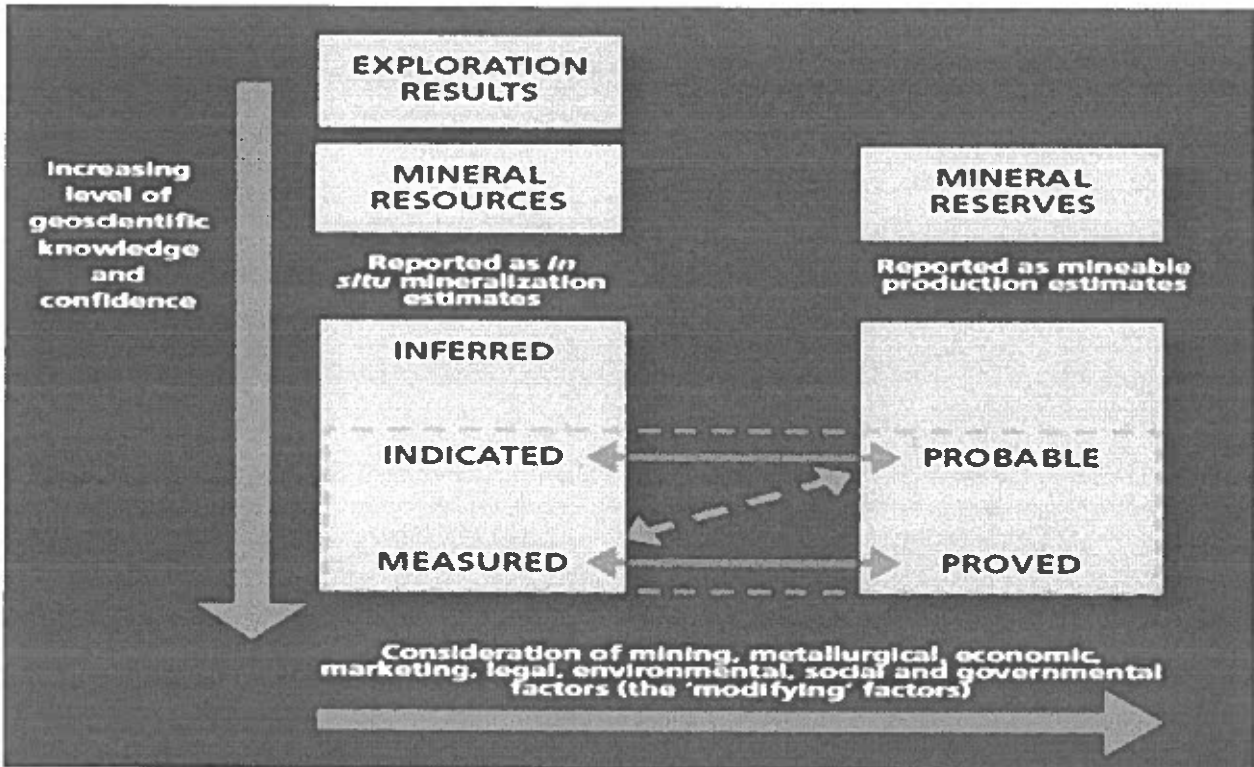
(15)

[20]

**Question 3**

3.1 Explain the relationship between Exploration results, Mineral resource and Mineral reserves by making use of the sketch below

(15)



3.2 Define Mineral Resource as per SAMREC code (5)

3.3 Define Inferred Mineral Resource (5)

3.4 Define Mineral Reserve as per Samrec Code (5)

3.5 Define Proved Ore Reserves (5)

3.6 Define Life of Mine Plan (5)

3.7 Define an Indicated Coal Resource (5)

[45]

#### Question 4

4.1 The following tabulation represents details of the development sampling of a mine where the pay limit is 8,35 g /t mined.

Section	Dev advance (m)	Distance Sampled (m)	Average RW (cm)	Average RV (g /t)	Estimated SW (cm)
A	381	249	41	34,3	127
B	127	122	38	8,6	122
C	91	61	71	6,0	157
D	262	183	48	30,0	145
E	204	183	64	13,7	152
F	73	61	66	25,7	155
		859	x	x	x

Calculate:

- The average Reef Width and Reef Value of the combined pay and unpay development.
- The average Stopping Width and stopping Value of the pay and unpay development (separately).
- The percentage of payability of the total distance sampled.

(10)

Total Marks [100]