



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## **MARKING GUIDELINE**

### **NATIONAL CERTIFICATE BUILDING AND STRUCTURAL SURVEYING N5**

**31 March 2020**

**This marking guideline consists of 5 pages.**

**SECTION A****QUESTION 1**

- 1.1 True
- 1.2 False
- 1.3 True
- 1.4 False
- 1.5 True

Candidate must supply applicable reason for each answer. (5 × 2) [10]

**QUESTION 2**

- 2.1 F
- 2.2 K
- 2.3 A
- 2.4 I
- 2.5 B
- 2.6 L
- 2.7 C
- 2.8 E
- 2.9 G
- 2.10 H

(10 × 1) [10]

**QUESTION 3**

- 3.1 When the elevation of the underside✓ of a bridge, the roof of a tunnel,✓ is required, the staff may be inverted✓ (held upside down). These readings are booked in the normal manner,✓ but a line is drawn above✓ the entry to show that the staff was inverted (some surveyors use a minus sign in front of the entry).
- 3.2 Whatever system is used, the instrument must be correctly orientated, that is the lower plate✓ must be set in such a way that the reading obtained when sighting any point is the true angle✓ at the instrument station between that point✓ and the chosen zero.✓ These directions are always measured in a clockwise sense✓ and may vary from 0° to 360°.
- 3.3 If the image formed by the objective does not lie in the plane of the cross hairs✓ and if the eye piece✓ is not accurately focused✓ on the cross hairs, a relative movement✓ between the image and the cross hairs will occur if the eye of the observer is moved.✓

3.4 These occur according to some system which, when known, can be expressed by some functional relationship.✓ It follows a pattern which will be duplicated if the measurement is repeated under the same conditions.✓ The system underlying a systematic error may depend on the observer,✓ the instrument used✓ and the physical or environmental conditions✓ at the time the measurement is made.✓

3.5 On this system the Y-co-ordinate is measured positive✓ to the west of the origin and negative to the east.✓ The X-co-ordinate is measured positive from the origin, in the positive direction of the X-axis, and negative in the opposite direction.✓ As a point on the equator is the origin, it is measured positive to the south. The system is divided into four quadrants✓ numbered in a clockwise direction, starting from the one in which both co-ordinates are positive.✓

(5 × 5) [25]

**TOTAL SECTION A: 45**

**SECTION B**

**QUESTION 4**

4.1 Measure the distance of the proposed structure from all four corners✓ and make it about 1 m less each side of the building.✓ Put the steel pegs or droppers on these new-found points✓ and mark them for a 2 m traveller✓ and take the 150 mm depth of top soil into consideration.✓ (Explanation 5 marks)

Equipment:

- About 2 m traveller
- Levelling instruments
- 3 fish lines
- Lime
- 4 m × 2 m steel pegs or droppers
- About 100 m tape

(Any FIVE) (10)

4.2

STATION	Y	X	CALCULATIONS	DIRECTION/DISTANCE
A	-2 167, 59✓ -2 315, 81✓	+303 248, 75✓ +303 409, 06✓	$\tan^{-1} \frac{-148, 22}{160, 31}$ ✓ = 42°45'21"✓	D = 360 – 45°45'21"✓ 317° 14' 38"✓
	-148, 22✓	+160, 31✓		
			Check	S = 218. 33 m✓
			$218.33 \cos 317^\circ 14' 38''$ ✓ = +160.31✓	
			$218.33 \sin 317^\circ 14' 38''$ ✓ = -148.22✓	

(15)