higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

BUILDING AND STRUCTURAL SURVEYING N5

1 February 2022

This marking guideline consists of 5 pages.

SECTION A

QUESTION 1

1.1 False
1.2 False
1.3 False
1.4 True
1.5 True

(5 × 1) **[5]**

QUESTION 2

2.1 instrument
2.2 right angles
2.3 reflected
2.4 deviation
2.5 surfaces
2.6 45°
2.7 silvered
2.8 visible
2.9 transparent
2.10 optical square

(10 × 1) **[10]**

QUESTION 3

3.1 A: Vernier
B: Index arm
C: Spirit level
D: Protractor arc
E: Telescope
F: Eyepiece

(6 × 1) (6)

3.2 The instrument is held against a ranging rod✓ and aimed at a distant ranging rod✓ in such a way that the line of sight is parallel to the ground.✓ The bubble is then turned✓ by a large milled-head knob✓ until the bubble appears in the mirror.✓ When the bubble is centred against the cross-wire,✓ the index arm will be pointing to the vertical angle reading for the ground slope.✓ The instrument is taken down from the eye and the angle reading is noted.✓ A vernier scale and a magnifying glass may be provided for a finer reading. (9)

[15]

TOTAL SECTION A: 30

SECTION B

QUESTION 4

4.1 a) Centre the instrument as accurately as possible over the instrument station.
b) Always orient on the farthest possible points, consistent with good visibility.
c) Always orient on an object that can be sighted with the utmost accuracy.
d) Always make sure that the sighting object is truly vertical.
e) Try to keep lines of sight well clear of the ground to minimise the effects of irregular refraction close to the ground.
f) Whenever possible, make a small mark on the top of the peg, so that the sighting object may be held at the same spot each time.
g) At all other times, at least one additional known point must be sighted to check the orientation setting.
h) Upon completion of the observations at a station, the orienting point must again be sighted to ensure that the instrument has not moved accidentally.

(Any 6 × 2) (12)

4.2 Area = l × b
= 85 × 40✓
= 3 400 m^2✓

Depth of excavation = average ground level – reduced level✓
= 425 – 421,5✓
= 3,5 m✓

Volume = area × depth
= 3 400 × 3,5✓
= 11 900 m^3 ✓ (7)

4.3 Ct = MD × e × (Tm – Ts)
= 170 × 0,000013 × 4✓
= 0,0088 m✓

Correct distance = 170,009 m✓ (3)
[22]