



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

BUILDING AND STRUCTURAL SURVEYING N5

28 July 2021

This marking guideline consists of 5 pages.

SECTION A**QUESTION 1**

- 1.1 False✓ – Measurements have to be reduced to horizontal for survey calculations and accuracy.✓
- 1.2 False✓ – Steel tapes expand with rise and contract with fall of temperature.✓
- 1.3 False✓ – A change plate is flat and not visible from a distance.✓
- 1.4 True✓ – It is brittle can break easily, and for accuracy.✓ Correct
- 1.5 True✓ – It must be oriented for accurate measurement.✓

(5 × 2)

[10]**QUESTION 2**

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

(10 × 1)

[10]**QUESTION 3**

- 3.1 Temporary benchmark – is a benchmark set up by a surveyor✓ for his own use on a particular job.✓ The temporary benchmark height may be established from a permanent benchmark✓ of MSL so that levels on the site may be referred back to the temporary benchmark✓ without having to check the permanent MSL benchmark every time.✓
- 3.2 Constant errors – these are errors in all measurements✓ that are made under the same circumstances,✓ have the same magnitude and algebraic✓ sign. The tape can be too long or too short.✓ A collimating error in the theodolite or dumpy level will produce a constant error.✓
- 3.3 Systematic errors – 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 that the measurement is made.✓

- 3.4 Temporary incorrect tape – a tape can become temporary incorrect due to the expansion or contraction ✓ caused by variations in temperature. ✓ The measurement is adjusted each time the tape is used ✓ and the degree of error varies according to the changing temperatures ✓ above or below that at which the tape was standardised. ✓
- 3.5 Permanent incorrect tape – permanent stretching ✓ of the tape due to an excessive amount of pull, ✓ or permanent shrinking ✓ due to defects in the materials and a short piece breaking off. ✓ This will result in an overlap when the tape is repaired. ✓

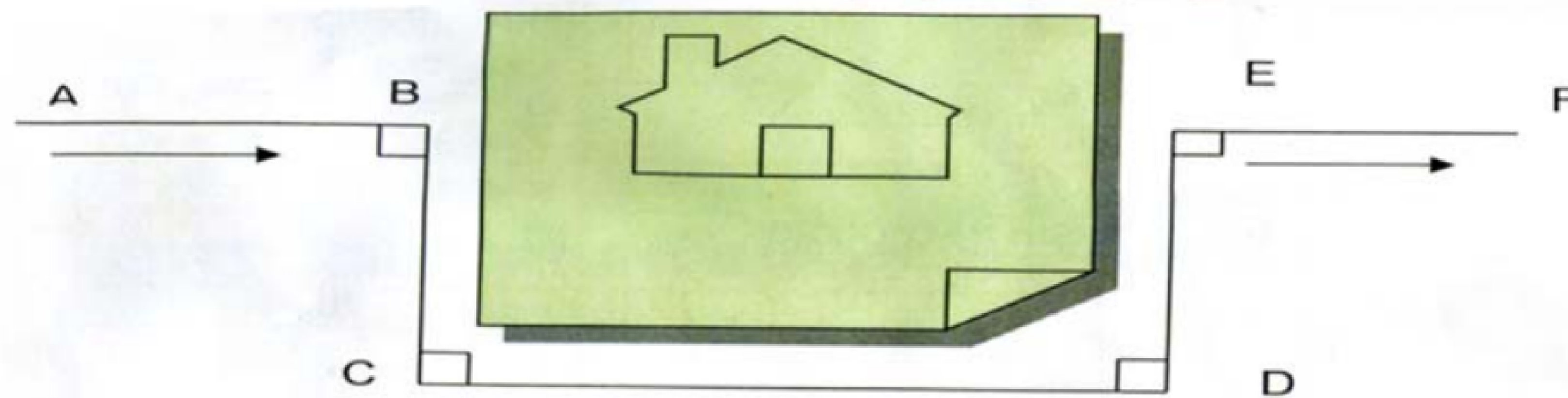
(5 × 5) [25]

TOTAL SECTION A: 45

SECTION B

QUESTION 4

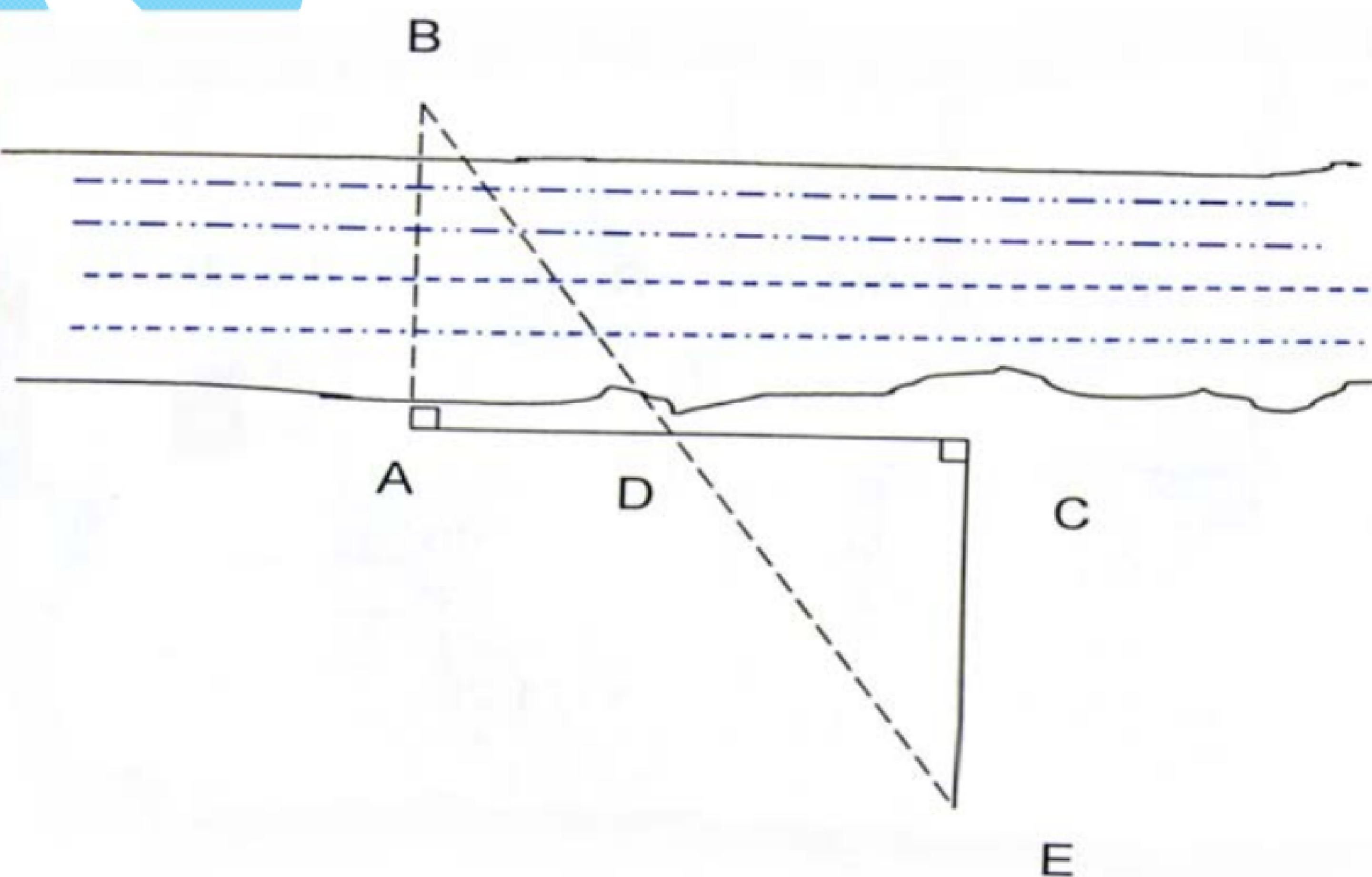
4.1 4.1.1



From two points, A and B, erect a perpendicular line BC, ✓ on line BC erect another perpendicular line CD ✓ to clear the obstacle. On CD, erect a perpendicular line, ✓ DE, equal in length to BC ✓ and on DE set off a right angle EF. ✓ EF is the extension of the survey line; distance $CD = BE$. ✓

(6)

4.1.2



Erect line AC at right angles to AB, ✓ measure AD equal to DC, ✓ locate point E ✓ by sighting from E through D to B; ✓ CE is thus equal to AB. ✓

(5)