higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

AUGUST EXAMINATION

BUILDING AND STRUCTURAL SURVEYING N5

28 JULY 2014

This marking guideline consists of 5 pages.

MOJAPELO C.M
(CM) 07/08/2014

DHET

MARKING INSTRUCTIONS

1. Mark neatly with a red pen.

2. Do not draw lines through wrong answers.

3. Write the marks for each answer in the right margin and the TOTAL for a whole question in a circle in the left margin.

4. Use your discretion should there be more than one possible correct answer/formula/sketch that does not appear on the memorandum. Evaluate it and allocate marks accordingly.

QUESTION 1

1.1 True √√
1.2 True √√
1.3 True √√
1.4 False √√
1.5 True √√

(5 x 2) **[10]**

QUESTION 2

2.1 A peg/marker in the ground to be used as a boundary peg, control point, benchmark, etc. √√

2.2 Level line is a line which lies in the level surface and is therefore normal to the direction of gravity at all times. √√

2.3 Geodetic survey is that branch of surveying concerned with the large areas on the surface of the earth to the extent that the curved nature of the earth can not be ignored. √√

2.4 Cadastral survey is that branch of surveying concerned with property boundaries. √√

2.5 Contours are lines on the surface of the earth joining points of the same height above mean sea level.√√

(5 x 2) **[10]**

QUESTION 3

3.1 Surveying instrument on a tripod √√

3.2 Control an excavation √√

3.3 Adjust the circular bubble to be in its centre √√

3.4 All three √√

3.5 All three √√

(5 x 2) **[10]**

QUESTION 4

A-B = 90.288 m× cos3°44'20 "√
= 90.096 m√

B-C = 72.408 m× cos4°32'59"√
= 72.175 m√

C-D = 47.652 m× cos2°09'07"√
= 47.618 m√

D-E = 62.081 m× cos2°44'30"√
= 62.010 m√

A-E = 90.096 m√ + 72.175 m√ + 47.618 m√ + 62.010 m√
= 271.959 m√√√ **[15]**

QUESTION 5

5.1 Attach the level securely to the tripod. √ The tripod feet must be firmly in the ground. √ Simultaneously turn adjacent foot screws in opposite directions to adjust the circular bubble to its center. √ Turn the level telescope 90° using the third foot screw to adjust the bubble to its center.√ √

5.2 Step chaining is conducted on site using the following instrument tape, plumb-bob, peg and ranging rods. √ From the peg on the ground the tape is stretched out horizontally√ and the distance to the tape being comfortably held at waist height√ a peg is punched in the ground by using a plumb-bob suspended from the horizontal distance being measured. √ The same operation is redone until the required total horizontal distance is measured.√

5.3 Off-sets must be taken from the road reserve to the boundary of the site that is required√ and a baseline parallel to the road drawn. √ These offsets are taken from stipulated chainages on the site plan√. The remaining boundaries of the site are then measured, perpendicularly to the baseline√ and the required site shape is then set out from the baseline. √

(3 x 5) **[15]**

QUESTION 6

6.1 Measure the distance of the proposed structure from all four corners√ and make it plus/minus 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. √

Equipment: +- 2 m traveller √
: Leveling instrument√
: Fishline/Building Line
: Lime√
: + 4 × 2 m steel pegs or droppers√
: +- 100 m tape√ (10)

6.2 From the site boundaries measure set out the proposed building increasing the area by plus or minus 1 m.√ Punch in two pegs (plus/minus 2 m long pegs)√ 1 m away from each corner in line with the building line in all four corners. √ Because of the length of the pegs, a traveller of 1.5 m would be appropriate.√ The formation level plus/minus the benchmark, plus the length of the traveller will give the staff reading on all the sight rails of the eight pegs. √ (5)

[15]

QUESTION 7

7.1 Each side =√16 m^2√√
= 4 m√
= 4 000 mm√
Thus 4 000/150√
= 26.667 mm√ (6)

7.2
- The contours are further apart when the terrain is gentle.√√
- The contours are closer together when the terrain has a steep slope.√√

(2 x 2) (4)

[10]

QUESTION 8

ADDENDUM A

TABLE 1

POINT	BACK-SIGHT	INTER-MEDIATE SIGHT	FORE-SIGHT	RISE	FALL	REDUCED LEVEL	REMARKS
A	1.320					28.965	TBM 28.965
B	1.360		1.332		0.012√	28.953√	
C		1.233		0.127√		29.080√	
D	2.145		1.113	0.120√		29.200√	
E	2.165		2.652		0.507√	28.693√	
F			2.536		0.371√	28.322√	
	6.990		7.633	0.247	0.890	28.965	
	7.633			0.890		-0.643√	
	-0.643√√			-0.643√√			

[15]

TOTAL: 100