higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CONSTRUCTION PLANNING
NQF LEVEL 2

8 December 2020

This marking guideline consists of 7 pages.

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QUESTION 1

1.1 True
1.2 False
1.3 True
1.4 True
1.5 False
1.6 True
1.7 True
1.8 True
1.9 False

(9 × 1) **[9]**

QUESTION 2

2.1 2.1.1 D
2.1.2 C
2.1.3 A
2.1.4 E
2.1.5 B

(5 × 1) (5)

2.1 2.2.1 Anvil
2.2.2 Spindle
2.2.3 Sleeve
2.2.4 Thimble
2.2.5 Ratchet

(5 × 1) (5)

2.3
- Wipe the instrument clean.
- Remove the dust from the lenses.
- Never touch the lens with your fingers.
- Store in a dust free area.
- Check the calibration label for next due date. (5)

2.4
- Hold a rope at point A and use the distance AB to swing an arc.
- Swing another arc of the same length from B so that it intersects with the first arc. The intersection is point O.
- Take O as the centre and swing arcs from O and A to get C.
- Swing arcs from O and C to get D.
- Continue this till F.
- Join ABCDEF to get the hexagon. (6)

2.5 2.5.1 200 mm
2.5.2 400 mm
2.5.3 100 Mpa
2.5.4 300 mm

(4 × 1) (4)
[25]

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QUESTION 3

3.1
- Foundation problems are caused by the movement of expansive
- and highly plastic soil
- beneath different sections of the foundation footings.
- When dry conditions prevail, the soil consistently lose moisture and shrink
- which causes settlement.
- When moisture levels are high, the soil swell, which causes heave.
- Expansive soil subsurface peat
- which has a low bearing capacity and deteriorates over time
- and can also cause differential settlement. (Any 2 × 3) (6)

3.2
- It must be done to produce a high unit weight of soil and consequently improve other soil properties.
- It is a natural process where soil below the building and other structures is compacted by the transferred load to the soil through the provided foundation system.
- It increases the shear strength, decreases the compressibility, and decreases the permeability of the soil.
- It reduces the void ratio, making it more difficult for water to flow through the soil. (Any 2 × 2) (4)

[10]

QUESTION 4

4.1 $= 500 \times 10^2$ ✓
$= 5 \times 10^4$ ✓ (2)

4.2 $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$
$= \frac{0.6\ \text{kg}}{0.3\ \text{m}^3}$ ✓
$= 2\ \text{kg/m}^3$ ✓ (3)

4.3
4.3.1 2 kg
4.3.2 24×10^6 mm
4.3.3 NO ANSWER WAS PROVIDED AND I AM NOT A SUBJECT SPECIALIST
4.3.4 NO ANSWER WAS PROVIDED AND I AM NOT A SUBJECT SPECIALIST
4.3.5 NO ANSWER WAS PROVIDED AND I AM NOT A SUBJECT SPECIALIST TQC OFFICER

(5 × 1) (5)

[10]

QUESTION 5

5.1 Length of trench
= 10 + 10 + 10 + 5 + 20 + 15
= 70 m✓✓

Area of footing
= 70 × 0.3✓
= 21 m²✓

Volume of footing
= 21 × 0,23
= 4,83 m³✓ (5)

5.2 Area of outer surface
= 2(15 × 4) + 2(8 × 4)
= 120 m² + 64 m²
= 184 m² ✓

Opening areas
= (1,2 × 2) + (2,2 ×1,5)
= 2,4 m² + 3,3 m²
= 5,7 m² ✓

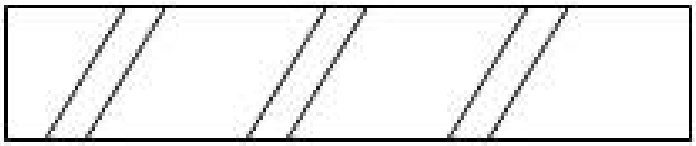
Total painting area
= 184 m² -5,7 m²
= 181,3 m²✓

Paint needed
= $\frac{181,3\ m^2}{5}$✓
= 36,26 litres
= 37 litres✓ (5)
[10]

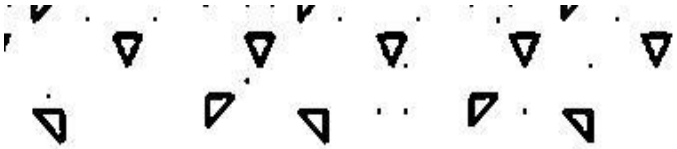
QUESTION 6

6.1 1:5 The actual object is 5 times larger than the drawing.
5:1 The actual object is 5 times smaller than the drawing. (2)

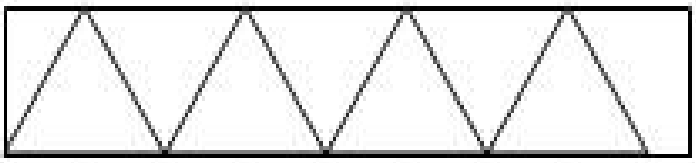
6.2 6.2.1



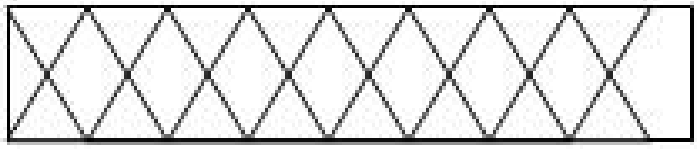
6.2.2



6.2.3



6.2.4



6.2.5



(5 × 1) (5)

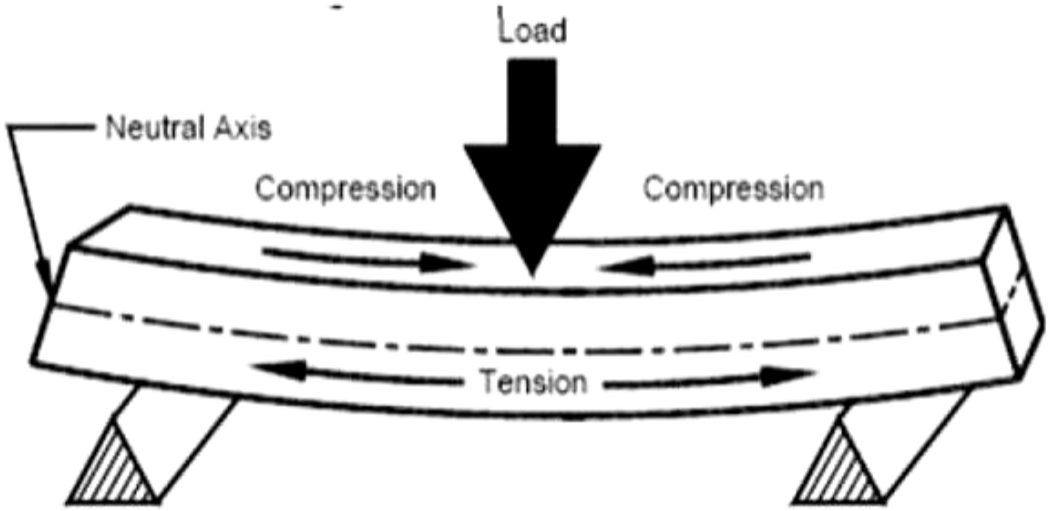
6.3 It gives the viewer insight into the following:
- the plan relative to its context
- the orientation relative to the sun
- other site conditions (3)

6.4 6.4.1 Column
6.4.2 Manhole
6.4.3 Walk-in closet
6.4.4 Beam
6.4.5 Hardcore or hollow core

(5 × 1) (5)
[15]

QUESTION 7

7.1



(6)

QUESTION 7.1: RUBRIC			
PART OF DRAWING	**CRITERIA**	**POSSIBLE MARK**	**MARK ACHIEVED**
Beam	Point Load	1	
	Compression	1	
	Tension	1	
	Neutral axis	1	
	Supports	2	
	TOTAL	**6**	

7.2 7.2.1 A member in a framed structure that is not necessary for support. (1)

7.2.2 To ensure extra safety to the structure so that it doesn't collapse. (1)

7.3 7.3.1 The weight of any movable object in the building

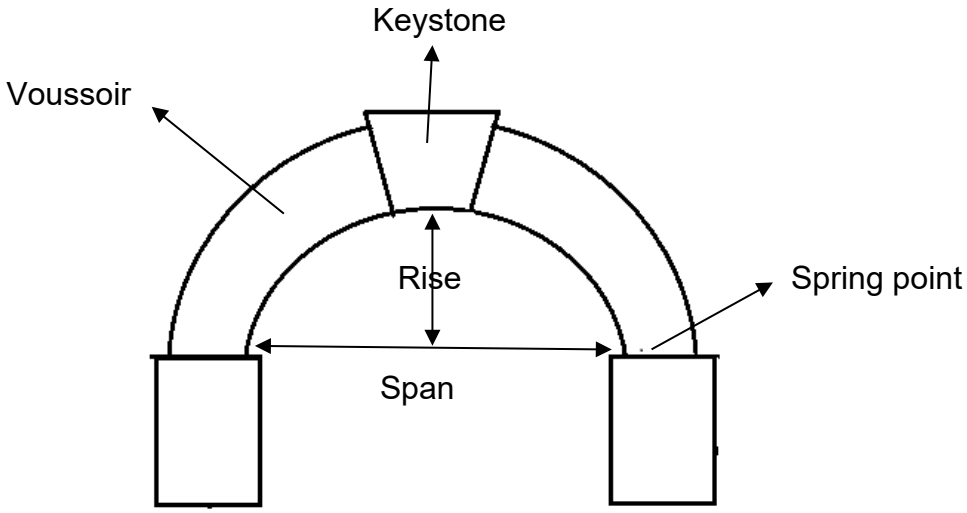
7.3.2 The weight of the structure itself

7.3.3 The load acting at one point

7.3.4 The load acting at the centre of a column

(4 × 1) (4)

7.4



(5)

QUESTION 7.4: RUBRIC			
CRITERIA	**PART OF DRAWING**	**POSSIBLE MARK**	**MARK ACHIEVED**
Correct position	Span	1	
	Springing point	1	
	Rise	1	
	Keystone	1	
	Voussoir	1	
	TOTAL	**5**	

7.5
- It is a structure built up of a number of straight members
- connected together at their ends by frictionless pinned joints
- to form a stable geometrical arrangement
- which is capable of carrying loads applied at some or all of the joints. (4)

[21]

TOTAL: 100

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