higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CONCRETE STRUCTURES
NQF LEVEL 2

22 November 2024

This marking guideline consists of 7 pages.

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QUESTION 1

1.1 1.1.1 Is a temporary structure or mould into which newly mixed concrete is placed and compacted to harden.

1.1.2 Is any temporary structure used to support a permanent structure while it is not self-supporting.

(2 × 2) (4)

1.2
- To contain freshly placed concrete while it is being compacted and until it has gained enough strength.
- To produce concrete element of required size, shape and surface texture. (2)

1.3
- The formwork must not bend or move under any planned load.
- Set out the formwork accurately according to the engineer's specifications.
- Formwork joints must seal properly to prevent leakage.
- Design the formwork for easy management. (4)

[10]

QUESTION 2

2.1 2.1.1 False
2.1.2 False
2.1.3 True
2.1.4 True
2.1.5 False

(5 × 1) (5)

2.2
- Steel
- Aluminium (2)

2.3 Shutterply (1)

2.4 Slump is a measure of the stiffness or sloppiness of freshly mixed concrete, mortar or plaster. (2)

[10]

QUESTION 3

3.1
- Concrete vibrators eliminate air bubbles by vigorously shaking the fleshly poured concrete.
- To remove trapped air inside concrete which causes an uneven finish structure. (Any 2 × 1) (2)

3.2 5 to 15 minutes (1)

3.3
- External vibrators attached to formwork.
- Poker vibrator.
- Vibrating screed boards.
- Vibrating tables. (4)

3.4
- Drawings needed for the manufacturing process.
- Drawings for work on-site.
- Detailed drawings for any form of construction that cannot be clearly shown on either of the other drawings. (3)

3.5 Skilled person is appointed, e.g. foreman, supervisor, inspectors. (1)

3.6
- Have the formwork systems been properly designed?
- Has the formwork been properly constructed?
- Is the formwork deck being laid safely?
- Is the formwork structurally adequate?
- Are wall and column shutters safely lifted and properly secured?
- Is the formwork being taken apart safely? (Any 4 × 1) (4)

[15]

QUESTION 4

4.1
- Joining panels together with other panels
- Putting together column boxes
- Joining walling to panels
- Joining column boxes to panels
- Joining soldiers to panels and walings (5)

4.2 A trammel (1)

4.3
- When you set out the shutters that you will use for formwork for curved walls
- Follow the same procedure as for straight walls, but with curved walls the outer side of the formwork is longer than the inner side
- You need to take this difference in length into account when erecting
- You must also take into account the slightly different curve (or shape) that the outer and inner sides of the formwork will have
- When you mark off the panel, use a special tool called a trammel

(Any 4 × 1) (4)

4.4
- Square-measuring tape
- Level-plumb line
- Upright-plumb line
- 90° angle -3.4.5 methods (Any 2 × 2) (4)

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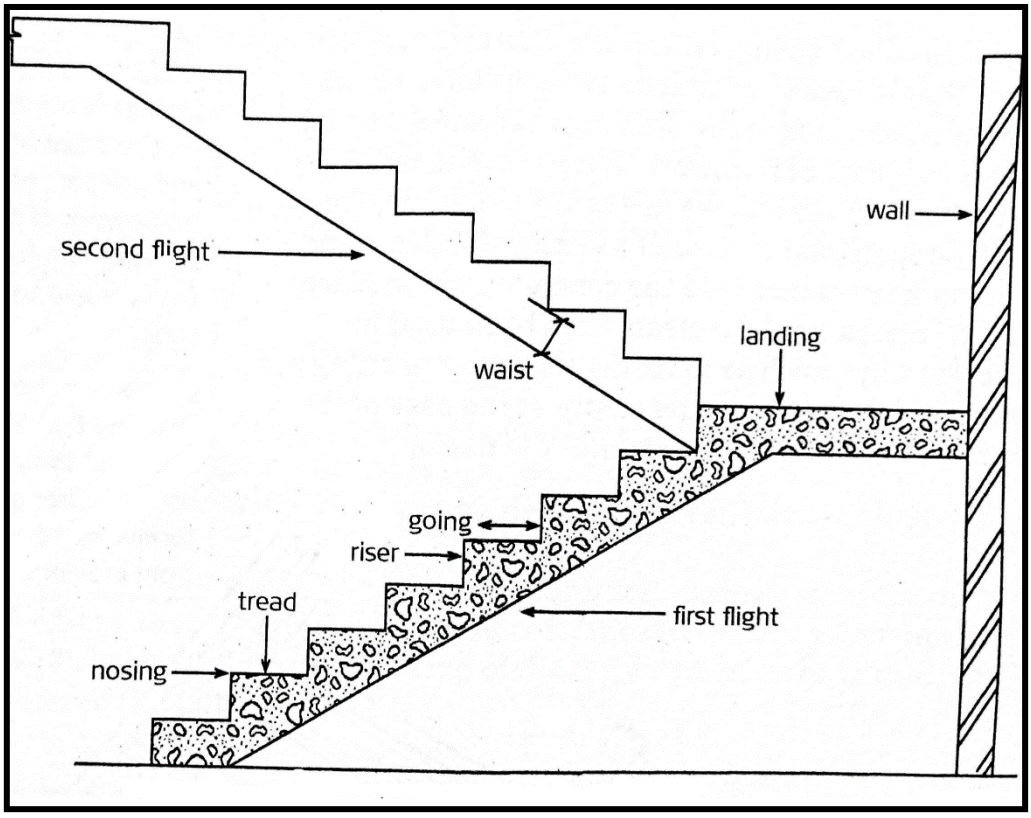
4.5



Mark allocation:

	Mark
Correct drawing	2
Any 7 correct labelling	7
Hatching of reinforcement	2
TOTAL:	**11**

(11)
[25]

QUESTION 5

5.1 (a) − Grooved contraction joint
(b) − Interior column
(c) − Expansion joint
(d) − Wall
(e) − Slab (5)

5.2 Construction joints are used to separate new concrete from existing or adjoining construction, which might expand or contract differently or experience different soil settlement and other movements. (2)

5.3 The difference in soil settlement (1)

5.4
- They allow a slab to move
- Reduce cracking caused when two movements are held back (2)

[10]

QUESTION 6

6.1
- Always follow manufacturer's instructions about the usage and storage of release agent.
- Never store the release agent in extremes of temperature.
- Avoid contact with eyes or clothing.
- Ensure that there is enough ventilation when you work with release agent.
- Always wear protective clothing, gloves, bearer cream for your hands and wear a protective mask.
- Release agent can burn easily so avoid smoking when carrying release agent. (Any 5 × 1) (5)

6.2
- Each time the formwork is to be used
- Before fixing the reinforcement
- According to the method and at the coverage recommended by the manufacturer (3)

6.3 Made from a small amount of chemical suspended in a petroleum distillate. (2)
[10]

QUESTION 7

7.1
7.1.1	H
7.1.2	E
7.1.3	J
7.1.4	C
7.1.5	I
7.1.6	A
7.1.7	F
7.1.8	B
7.1.9	D
7.1.10	G

(10 × 1) (10)

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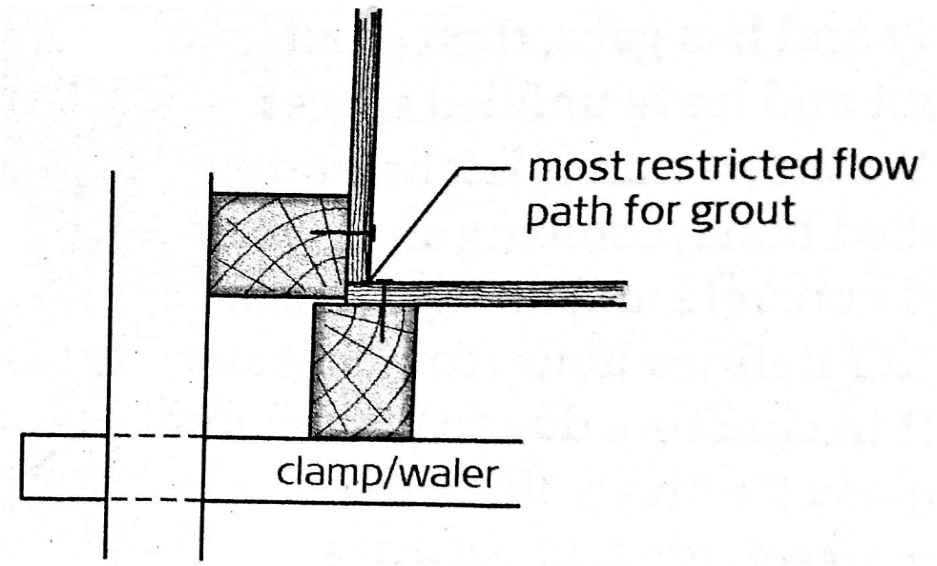
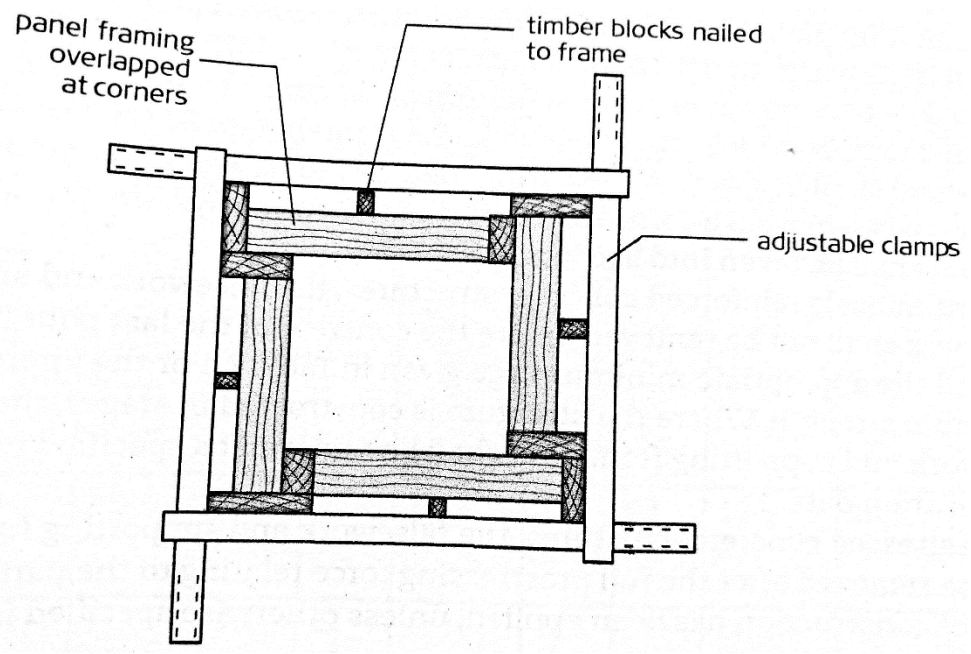
7.2 7.2.1



Mark allocation:

	Mark
Correct drawing	3
Labelling	1
Hatching of reinforcement	1
TOTAL:	**5**

7.2.2



Mark allocation:

	Mark
Correct drawing	3
Labelling	1
Hatching of reinforcement	1
TOTAL:	**5**

(10)
[20]

TOTAL: 100

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