higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 2

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This marking guideline consists of 6 pages.

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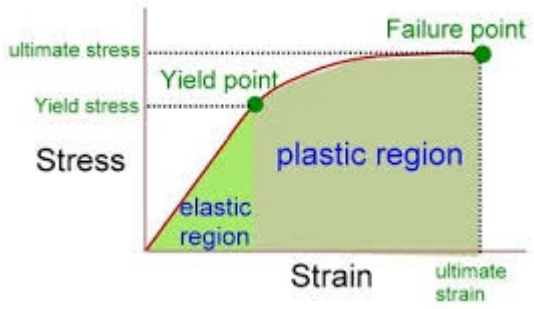
QUESTION 1

1.1 1.1.1 Toughness is a measure of how well a material can resist✓ complete failure such as cracking or breaking when force is applied to it.✓

1.1.2 Bulk density is the density of granular materials✓ where the volume includes the air voids in the gaps between the particles.✓

(2 × 2) (4)

1.2



Labelling: Elastic region,✓ Plastic region,✓Failure point✓ Yield point,✓ Correct graph✓ (5)

1.3
- Site location
- Design
- Construction
- Maintenance
- Waste removal

(Any 1 × 1) (1)

[10]

QUESTION 2

2.1 The earth and all solar systems✓ came into being resulting from an immerse explosion of gases✓ from which debris is still speeding outward from the energy caused by the explosion.✓ (3)

2.2 2.2.1 Mantle
2.2.2 Igneous rock
2.2.3 Gold

(3 × 1) (3)

2.3 The process that causes something to change into another form. (1)

2.4
- Igneous rock
- Sedimentary rock
- Metamorphic rock

(3 × 1) (3)

[10]

QUESTION 3

3.1
- Silt shows very little cohesion
- Silt shows weak bearing capacity
- Silt shows low resistance to shear (Any 2 × 1) (2)

3.2
- Foundations can settle and crack
- Concrete slabs and floors can break and tilt
- Sewerage and water pipes can bend or break as the building settles
- Basements in marshy soil can crack and leak (Any 2 × 1) (2)

3.3 3.3.1 Sheep-foot roller
3.3.2 Plate compactor
(2 × 1) (2)

3.4 3.4.1 Wattle is the upright posts or sticks, with twigs or softer tree branches woven in between in a lattice form.✓ Daub is a mixture of clay, mud and straw that is plastered onto the wattle and left to dray to form a wall.✓

3.4.2 Rammed earth is soil that has been compacted into a shape or form.✓ To ensure that the earth is compacted enough as it will crumble away if it is not.✓
(2 × 2) (4)
[10]

QUESTION 4

4.1
- Clay
- Shale
- Sand (Any 2 × 1) (2)

4.2
- It is slow, dirty process with a lot of smoke.
- It is labour-intensive.
- Bricks near the outside are often soft and under baked.
- A lot of breakages and damage occurs. (Any 3 × 1) (3)

4.3
- Very durable.
- Not easily damaged by weather.
- Creates a pleasant clay appearance. (Any 2 × 1) (2)

4.4
- It can result in poor brick mortar bonding.
- If a brick is exposed to excessive amounts of water it may expand,
- then dry out and contract. (3)

4.5
- To reduce the cost of making concrete bricks
- To maintain the strength of the brick (2)

4.6 South African Bureau of Standards (SABS). (1)

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4.7
- The concrete bricks should not be exposed to direct sunlight.
- The concrete mix must contain the correct proportions of water, lime, sand.
- Sand concrete in the aggregate should not settle to the bottom of concrete mix. (Any 2 × 1) (2)

[15]

QUESTION 5

5.1 5.1.1 The process by which concrete is kept damp✓ to ensure that the hydration process in the outer skin can continue unhindered.✓

5.1.2 Bleeding is the rising of water from inside the concrete✓ to the surface as the concrete starts to set and harden.✓

(2 × 2) (4)

5.2 If the concrete is left for too long✓ it will begin to harden and gain strength.✓ (2)

5.3 Tensile forces are the forces that pull✓ materials apart,✓ whereas compression forces are the forces squashes✓ or presses down on to the material.✓ (4)

5.4
- Safety gloves
- Safety boots
- Aprons
- Dust masks
- Safety goggles (Any 3 × 1) (3)

5.5
- It makes concrete smooth and workable.
- It makes concrete waterproof. (2)

5.6
- The water must be clean, neat and drinkable.
- The water must not contain substances that might affect the concrete in the short and long term.
- The pH must be 6–8. (3)

5.7
- Cement bags should be kept in a temperature-controlled room.
- Store bags away from sharp objects as these might tear the bags.
- Bags should not be stacked more than 12 bags high.
- Bags of cement should be placed on stacks of wood to prevent contact with the floor.
- Different types of cement should not be stored together (Any 3 × 1) (3)

5.8 Plastic settlement cracks occur where concrete is restrained from settling,✓ like where adjoining concrete has differing depths or where reinforcement occurs,✓ whereas plastic shrinkage cracks happen when water evaporates from the exposed surface✓ of the concrete at a faster rate than the rate of bleeding.✓ (4)

[25]

QUESTION 6

6.1 The sand should be graded✓ to ensure that it does not contain any organic matter.✓ The sand particles must be less than 5 mm in diameter.✓ (3)

6.2
- Masonry cement makes finer mortar.
- Masonry cement mortar is waterproof.
- Masonry cement can accommodate the addition of any kind of admixture in the mortar used. (Any 2 × 1) (2)

6.3
6.3.1 True
6.3.2 False
6.3.3 False
6.3.4 False
6.3.5 True

(5 × 1) (5)
[10]

QUESTION 7

7.1 Plaster with a pretty,✓ smooth, even-coloured finish.✓ (2)

7.2
- Vacuum cleaning
- Water jetting
- Blowing with compressed air (3)

7.3
- Water retention and absorption.
- It resists freeze-thaw deterioration.
- It is resistant to sulphate attacks.
- It has better dry shrinkage properties. (Any 3 × 1) (3)

7.4
- Cracking
- Crazing
- Debonding
- Lack of hardness (Any 2 × 1) (2)

[10]

QUESTION 8

8.1
8.1.1 B
8.1.2 C
8.1.3 A
8.1.4 E
8.1.5 D

(5 × 1) (5)

8.2
- Ponding
- Using a curing compound.
- Using a covering material.
- Covering the surface with hessian or wet sand (Any 3 × 1) (3)

8.3
- Cement
- Sand
- Water
- Stone (Any 2 × 1) (2)

[10]

TOTAL: 100

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