higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 4

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This marking guideline consists of 5 pages.

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QUESTION 1: PLASTICS.

1.1
1.1.1 B
1.1.2 C
1.1.3 D
1.1.4 A
1.1.5 A

(5 × 1) (5)

1.2
1.2.1 Polyethylene
1.2.2 Nylon
1.2.3 Polyvinyl chloride
1.2.4 Teflon
1.2.5 Polyester

(5 × 1) (5)

1.3
1.3.1 Lamination is the process used to join two or more layers✓ of material to form a composite.✓

1.3.2 Photo degradation refers to chemical changes✓ in a material that take place when the material absorbs UV light.✓

(2 × 2) (4)

1.4
- Low elastic modulus
- High creep
- High coefficient
- Low density
- Combustibility

(Any 4 × 1) (4)

1.5
- Corrosion resistant
- Can be recycled
- Strength-to-weight ratio

(Any 2 × 1) (2)

[20]

QUESTION 2: ELASTOMERS

2.1
- Elasticity
- Snap/rebound
- Resilience
- Modulus of elasticity

(Any 3 × 1) (3)

2.2
- It stays elastic after curing
- It does not shrink
- It keeps its colour and is waterproof
- It resists most chemicals and solvents
- It does not resist mould

(5)

2.3 Indication of how easily a fluid✓ or gas can pass through a porous medium.✓ (2)

[10]

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QUESTION 3: ADHESIVES.

3.1 A contact adhesive is an adhesive that sticks to itself.✓ Contact adhesives do not solidify when they dry✓ and are not tacky or viscous but remain flexible and rubbery.✓

A hot-melt adhesive is solid when it is bought but when heat is applied✓ it melts and becomes sticky.✓ When it cools down, it solidifies again forming a bond between surfaces.✓ (6)

3.2
- Chemical factors – Van der Waals forces
- The surface area of the joint
- The cleanliness of the surface
- The texture of the surface
- The strength of the adhesive
- The adhesive's ability to fill gaps
- The adhesive's compatibility with the substrate (Any 5 × 1) (5)

3.3
- Fit well together
- Are sound
- Are dry
- Are clean and free of dust (4)

[15]

QUESTION 4: PAINTS, WATER REPELLENTS, COATINGS AND PRESERVATIONS.

4.1 H2 treated timber is timber not in contact with the ground✓ that is covered by a roof✓ and not exposed to outside weather conditions.✓ (3)

4.2
- Doors
- Roof trusses
- Panelling
- Structural timber
- Ceilings
- Flooring (Any 3 × 1) (3)

4.3
- Solvents
- Binders
- Additives
- Pigments (Any 3 × 1) (3)

4.4 Step 1: Remove all grease.
Step 2: Sand the metal
Step 3: Wash the metal
Step 4: Make sure the surface is ready to be painted
Step 5: Prime the metal (5)

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4.5
- Inexpensive
- Easy to use
- Breathable
- Eco friendly
- Does not need expensive equipment
- It provides a more weather-proof finish
- Can be applied for new or old brickwork as well as concrete surfaces

(Any 6 × 1) (6)
[20]

QUESTION 5: WATERPROOFING OF BUILDINGS, DAMP PROOFING AND VAPOUR BARRIER INSTALLATION.

5.1 Paint the area to be waterproofed using the waterproofing paint.✓ Lay the membrane on top of the wet paint.✓ Using the bristles of the paint brush, press the membrane onto the wet paint.✓Remove air bubbles caused by air trapped under the membrane by dabbing the cloth with the brush.✓ Immediately apply the waterproofing paint over the membrane to ensure a watertight finish.✓ (5)

5.2
- It is easily applied on both new and old structures
- It reduces air florescence
- It allows water vapour to escape from the structure
- It is resistant to weathering (Any 3 × 1) (3)

5.3
- In-situ reinforced liquid system
- Acrylic resin-based cementite
- Bitumen emulsion system
- Polymer modified bitumen membrane (torch on) (Any 2 × 1) (2)

5.4 It is a wall that consist of two parallel single-leaf masonry walls✓ separated by a gap or cavity.✓ (2)

5.5
- To prevent any rising damp from entering the wall.
- To prevent moisture in the soil below the floor slab from penetrating the concrete slab and damaging the floor reinforcement and finishes.
- A DPC is also placed between the wall and the bottom of a window sill to prevent seepage into the building and protects interior paint from blistering and peeling.
- A DPC is placed between the sections at the base of an exterior wall and reduces seepage into the masonry exterior walls. (Any 3 × 1) (3)

[15]

QUESTION 6: BITUMEN, TAR AND ASPHALT.

6.1
- A natural substance that is black in colour.
- Non-volatile.
- Bitumen is now used for road works instead of tar as it is much safer and environmentally friendly.
- Highly viscous at low temperature. (4)

6.2
- Allows rapid drainage of water.
- Economical in comparison with other types.
- Highly resistant to rutting. (Any 2 × 1) (2)

6.3
- Hot-mix asphalt
- Cold-mix asphalt (2)

6.4 It is produced by breaking the bitumen into smaller particles✓ and dispersing it in water by means of emulsifiers and high speed colloid mixing mills.✓ (2)

[10]

QUESTION 7: FASTENERS.

7.1
- Blind rivet/ pop-rivet
- Solid rivet
- Flush rivet (Any 2 × 1) (2)

7.2
- Cost effective
- Easily disassembled and can be reused
- Similar or dissimilar materials can be joined
- Improved stress distribution when distributed evenly
- Resists flex and mechanical shock
- Wide range of applications (Any 5 × 1) (5)

7.3
- To identify the material that the bolts are made of
- To provide torque or force indication specifications
- To maintain quality control
- To specify the types of bolts used on a structure
- To reduce the possibility of the wrong bolt application (Any 3 × 1) (3)

[10]

TOTAL: 100

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