higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE

## SURFACE ELEMENTS THEORY AND PRACTICAL N4

## 23 October 2020

**This marking guideline consists of 8 pages.**

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## SECTION A

## QUESTION 1

| | | | | |
|---|---|---|---|---|
| 1.1 | 1.1.1 | H | | |
| | 1.1.2 | J | | |
| | 1.1.3 | I | | |
| | 1.1.4 | F | | |
| | 1.1.5 | A | | |
| | 1.1.6 | B | | |
| | 1.1.7 | C | | |
| | 1.1.8 | D | | |
| | 1.1.9 | E | | |
| | 1.1.10 | G | | |
| | | | (10 × 2) | (20) |
| 1.2 | 1.2.1 | True | | |
| | 1.2.2 | False | | |
| | 1.2.3 | True | | |
| | 1.2.4 | True | | |
| | 1.2.5 | True | | |
| | 1.2.6 | False | | |
| | 1.2.7 | True | | |
| | 1.2.8 | False | | |
| | 1.2.9 | True | | |
| | 1.2.10 | False | | |
| | | | (10 × 2) | (20) |
| 1.3 | 1.3.1 | protect | | |
| | 1.3.2 | plant | | |
| | 1.3.3 | concrete | | |
| | 1.3.4 | broad-leaf/angiosperm/deciduous | | |
| | 1.3.5 | slippery | | |
| | 1.3.6 | absorb | | |
| | 1.3.7 | cracks | | |
| | 1.3.8 | ceilings/drywalling | | |
| | 1.3.9 | Jacquard | | |
| | 1.3.10 | Pakistan | | |
| | | | (10 × 2) | (20) |
| | | | | **[60]** |

**TOTAL SECTION A: 60**

**QUESTION 2**

2.1 2.1.1 Textured wallpaper simulates natural✓ materials✓ such as brick,✓ fabric,✓ stone,✓ wood,✓ marble and plaster.✓ Its use is limited✓ but if used correctly it can be effective.✓ (Any FIVE)

2.1.2 Novelty paper consists of circus scenes,✓ animals of fictional characters for children's rooms✓ and adult themes such as the 'Gay Nineties'✓ scenes that lend fun✓ to cloakrooms,✓ hallways✓ or bars.✓ (Any FIVE)

(2 × 5) (10)

2.2 2.2.1 Shed ceilings rise diagonally✓ and give the illusion of space.✓ It draws the eye upward✓ and accentuate vertical space,✓ providing excellent acoustics.✓ (Any THREE)

2.2.2 Dropped ceilings allow for recessed lighting systems✓ that softly illuminate the room.✓ It demarcates certain areas e.g. bulkheads.✓

2.2.3 Beamed ceilings establish a rhythm up and down the room,✓ accentuating the length and breadth.✓ It forms an excellent focal point, depending on colour and size.✓

2.2.4 Beam and block, also referred to as rib and block, are mostly used in residential and industrial applications. This slab type is made up of prestressed beams and hollow blocks and are temporarily propped until set, typically after 21 days.✓ A hollow core slab is precast and installed on site with a crane.✓ In high-rise buildings and skyscrapers, thinner precast concrete slabs are slung between the steel frames to form the floors and ceilings on each level.✓ Cast in situ slabs are used in high-rise buildings and huge shopping complexes as well as houses.✓ These in situ slabs are cast on site using shutters and reinforced steel.✓ (Any THREE)

2.2.5 Vault ceilings have an arched form used to provide a space within a ceiling or roof.✓ The parts of a vault exert lateral thrust that requires a counter resistance.✓ When vaults are built underground, the ground gives all the resistance required.✓ However, when the vault is built above ground, various replacements are employed to supply the needed resistance.✓ An example is the thicker walls used in barrel or continuous vaults.✓ Buttresses are used to supply resistance when intersecting vaults are employed.✓ (Any THREE)

(5 × 3) (15)

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2.3 2.3.1 India (2)

2.3.2 Dhurries are the quintessential Indian flat weave.✓ Woven with cotton,✓ they are lightweight✓ and were traditionally used as summer carpets.✓ Dhurries use a classic Indian palette with lighter shades of indigo,✓ rose and terracotta highlighting a medium blue ground.✓ The stepped diamond design is simple and geometric.✓ Flat-weave rugs have been used for thousands of years as floorings, wall hangings✓ and prayer mats.✓ (Any 6 × 1) (6)

2.3.3 Dhurrie rugs or flat-weave rugs✓ are hand-woven✓ by weavers using a unique hand-weaving style.✓ Flat weave describes a rug that is woven on a loom rather than knotted.✓ Rugs woven in flat weave are generally quite thin,✓ making them highly versatile.✓ (6)

2.4 A – Twill weave
B – Sateen weave
C – Herring-bone weave
D – Plain weave
E – Basket weave
F – Satin weave

(6 × 1) (6)
**[45]**

**QUESTION 3**

3.1 3.1.1 Laboratory and kitchen countertops are used to place equipment, tools, projects and chemicals. Characteristics of laboratory counter-tops are generally determined by the reagents or corrosive chemicals being used. The purpose of the countertop would be different depending on whether it is used in a chemistry lab, physics lab, food-science lab, microbiology or biology lab. Common characteristics of preferred laboratory countertops are strong, durable and water-, moisture- or chemical resistant.

3.1.2 Wooden countertops come in various designs ranging from butcher blocks to joined planks to single wide staves. Wood is considered to be the most ecofriendly option when it comes to choosing a kitchen countertop as wood is a renewable resource. Wooden countertops must be thoroughly cleaned and disinfected after contact with foods such as raw meat. Although the use of wooden work surfaces is prohibited in commercial food production areas in the EU and the US Department of Agriculture advises against the use of wooden chopping boards, research by the Food Research Institute at the University of Wisconsin has shown that wooden work surfaces are no more dangerous, and in some cases safer, than plastic alternatives.

They have also shown that while bacteria do get absorbed by the wood, they do not multiply and eventually die. While brand-new plastic work surfaces are indeed easy to disinfect, once they have become heavily knife scarred they are nearly impossible to completely disinfect. This is not a problem with wooden work surfaces where the number of knife cuts made little difference.

3.1.3 Custom architectural crafted glass, tempered glass, textured glass pieces and the ancient art of verre églomisé, or reverse-gilded glass, are applied to contemporary uses including countertops, backsplashes and table tops. Glasswork may be customised to suit craftsmen in the studio and then installed on site either in small components (such as a kitchen countertop composed of three rectangles of verre églomisé) or as immense single units (for example a glass countertop and sink basin formed of one continuous piece of textured glass). Surface texture comes in several variations, such as sanded, melted, pixels and linear. Glass countertops also often have customised edges, including bushed, polished, textured and fire-polished edges. The glass is nonporous, relatively stain-proof, extremely hygienic and extremely heat-resistant (up to 700 degrees). Much work is being done to recycle glass using sources such as postconsumer glass or postindustrial float glass. The material can be crushed or cut into strips that are heated until the softening point of glass, binding the loose material back into a solid form.

3.1.4 Postformed (or literally formed after being laminated to the substrate) high-pressure laminated countertops, often referred to as plastic laminated countertops, is made more of wood product than plastic. The composition is of craft paper, decorative papers, and melamine resins, bonded through high heat and pressure. This product is sometimes referred to as Formica or Arborite, but these are trade names of a manufactured high-pressure laminate, of which there are many manufacturers. The postform countertop is typically a high-volume factory-produced product, which accounts for the economy of the product. The material composition consists of a single thin sheet of laminate (typically .030' - .040' in thickness) that gets bonded to a 45# density particle board substrate (or other similar base material such as MDF (medium-density fibreboard) or plywood) with a PVA (poly vinyl acetate) adhesive or a water-based adhesive. Traditionally postform countertops were manufactured with solvent-based contact cement (a highly flammable, volatile organic compound (VOC)). However, in today's marketplace PVA adhesives have taken over for reasons of environmental responsibility (no VOCs), safety (noncombustible), economy and strength of the glue line.

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Overall, the postform countertop is the most economical countertop on the market and has the broadest selection of surface material to choose from. Surfaces can be either a solid colour or a pattern, and textures range from a satin furniture finish to a heavily textured stone or pebbled appearance to a high-gloss resolution. Because of this diversity, the postform countertop can satisfy a wide variety of design applications and due to its economy, it can be easily replaced to provide a fresh appearance in any room.

3.1.5 Cultured marble countertops are human-made vanity tops that resemble real stone marble. Cultured marble countertops are made by mixing high-strength polyester resin and real marble stone dust. The combination is then formulated with additional chemicals and poured into a cast mould. These moulds can ultimately produce bathtubs, whirlpool decks, shower pans, window sills and vanity tops. The finished material is significantly less expensive than natural marble and four times stronger than natural stones such as granite or marble. The process of using a mould also allows the fabricated countertops to have features such as different surface textures and a vast array of colours which natural stone does not have. Cultured marble countertops are aesthetically pleasing and a more economical and durable alternative to real stone marble.

(5 × 5) (25)

3.2 One of the most popular uses for ceramic as a building material is as tiles for floors, walls, cabinetry, tubs, showers and ceilings.✓ Tiles are made in numerous materials, sizes, shapes, thicknesses and surface textures.✓ In addition to ceramics, tiles can be made with glass, stone and even metal additives.✓ All floor tiles can be used on walls and other surfaces, but not all wall tiles can be used as floor applications, which require more durable and thicker tiles.✓ Tiles are installed in Portland cementation setting beds (thickset) or with special epoxy adhesives (thin set). As in bricklaying, patterns and joints can vary a great deal.✓ Grout, in many colours and finishes, is added between the tiles in various widths, depending on how the tile is used, for example as a floor or wall application.✓ Ceramic tiles are made from different clays and shale mixtures.✓ They are fired at different temperatures to produce specific glazes, surface finishes and hardness.✓ Ceramic tiles are produced in three basic types, namely glazed,✓ mosaic✓ and quarry.✓

Glazed ceramic tiles are used in many ways, both on building exteriors and in interiors. They are produced in modular sizes and often have matching trim pieces for corners, wall bases and nosings.✓ Floor tiles have a heavier coat of glazing than wall types, since floor units are subject to heavy traffic and must have very tough glazes as their finish coat.✓

Mosaics are an assembly made of small pieces of glass, stone, tiles and other materials.✓ Mosaic ceramic tiles are made in small sizes for composing intricate patterns for use in murals, on floors and against walls. Mosaic tiles are made with clays, porcelain or glass,✓ and sometimes are produced in units with a back-mounted fibre mesh to facilitate their handling and installing. These are generally smoother, brighter and more impervious than other glazed tiles.✓

Quarry tiles, made of graded shale and fine clays, are among the thickest and strongest of the tiles.✓ Their colour is usually a result of the type of clay used.✓ Quarry tiles are generally left unglazed in their terracotta state.✓ These tiles are available in reds and browns; in some cases the faces might be flashed, producing a centre lighter than the edges.✓ Traditional quarry tiles are long-lasting and excellent for floors that receive a lot of abrasion.✓ Quarry tiles are also produced in various colours, tints and finishes.✓ This tile exhibits a rough, uneven shape and thickness and is usually glazed or hand-painted. Its appeal is in its handmade qualities and rustic imperfections.✓

Digital tiles✓ are made as custom tile printing utilising inkjet printers and ceramic inks with digital images of photography and art✓ to produce photographic images/patterns in restaurants, kitchens, showers and many other locations.✓ (Any 15 × 1) (15)

3.3 3.3.1 Plywood is composed of an odd number of veneered woods.✓ It is pasted at right angles to each other.✓ Some have a core of lumber or pressed wood.✓ Laminated wood has grain in successive layers✓ in the same direction.✓ This is used in furniture that are bent✓ and the stresses and strains are in one direction.✓ (7)

3.3.2
- Available in larger pieces
- Stronger than solid wood of the same thickness
- Less likely than solid wood to shrink, check or warp excessively
- Less likely to be split by nails or punctured by sharp objects.
- Give identical grain so it is easy to match
- Permit use of fragile highly figured wood that, if solid, might split apart or shrink irregularly
- Lend to being curved in irregular forms
- Possible flush surfaces of large size that is stable
- More extensive use of rare, costly woods (Any 8 × 1) (8)

**[55]**

## QUESTION 4

4.1 4.1.1 The roof is constructed with slim wooden poles✓ covered with grass.✓ A sturdy pole is planted in the middle to support the roof.✓ This is as high as the roof is meant to be, higher than the walls.✓ The poles are placed in a radial pattern✓ and covered with thinner branches in a spiral pattern.✓ The special dry grass✓ is neatly packed and stitched with twine.✓ The walls are also constructed with wooden poles planted vertically✓ in a circle✓ and covered with horizontal thin tree branches.✓ The wooden structure is then filled up with clay and left to dry.✓ The floor is usually levelled with clay.✓ A raised bench-like area against the wall could be made as seating.✓ In the middle is a round raised wall, not very high, where fire is made.✓ (15)

4.1.2 The walls are covered with paint.✓ The colours are bold and bright.✓ They are always painted in geometrical patterns✓ on white.✓ The motif is painted in black and filled in with colour.✓ The paintings tell a story to all passers-by about the lives of the family that live within these walls.✓ (5)

4.1.3 The Ndebele tribe (2)

4.2 Wallpaper printing techniques include surface printing, gravure printing, silk-screen printing, rotary printing and digital printing. Other versions may also apply. An explanation of each should accompany each example for TWO marks. (6 × 2) (12)

4.3
- Good elasticity, crease-resistant
- Strong even when wet
- Low absorbency
- Very resistant to moths, mildew and chemicals
- Can be damaged by the sun but not behind glass
- Inclined to absorb greasy stains and oils
- Wear-resistant
- Low flammability (Any 6 × 1) (6)

**[40]**

**TOTAL SECTION B: 140**
**GRAND TOTAL: 200**

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