higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CONSTRUCTION PLANNING
NQF LEVEL 2

XX February 2020

This marking guideline consists of 5 pages.

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QUESTION 1: TERMINOLOGY AND COMPONENTS OF THE CONSTRUCTION INDUSTRY

1.1 viaduct
1.2 deviation
1.3 contract
1.4 curing
1.5 in-situ

(5 × 1) **[5]**

QUESTION 2: MEASURING, SETTING OUT AND LEVELLING

2.1 2.1.1 False
2.1.2 True
2.1.3 False
2.1.4 False
2.1.5 True

(5 × 1) (5)

2.2 A Anvil
B Spindle
C Sleeve
D Thimble
E Ratchet

(5 × 1) (5)

2.3
- Uneven surfaces
- Hard places (2)

2.4
- Set up the tripod with the centre roughly over the peg.
- Fix the theodolite firmly over the tripod.
- Look through the optical plummet and see if the target of the plummet is centred on the peg.
- If not, adjust the foot screws to get the centre.
- If not, move two legs of the tripod while looking through the plummet. (5)

2.5 2.5.1 Water level (1)

2.5.2 A – Transfer point
B – Tube/Hose
C – Cut line (3)

2.5.3
- Operated by two people
- Time consuming, restart needed if water spills out
- Rising and falling water when moving to a new location
- Inaccurate reading due to bubbles in water
- Temperature changes affecting the composition of the plastic tube
- Surface tension causing incorrect reading (Any 4 × 1) (4)

[25]

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QUESTION 3: FOUNDATIONS

3.1
3.1.1 pile foundation
3.1.2 10400
3.1.3 strip foundation
3.1.4 raft foundation
3.1.5 pad foundation

(5 × 1) (5)

3.2
- Soil strength
- Amount of moisture in the soil (2)

3.3 Soil around the foundation may be washed away✓ leaving the wall exposed to twist and crack during heavy storms✓ weakening the building.✓ (3)

[10]

QUESTION 4: BEHAVIOUR OF STRUCTURES

4.1
4.1.1 cantilevers
4.1.2 neutral axis
4.1.3 compression
4.1.4 compression
4.1.5 springer

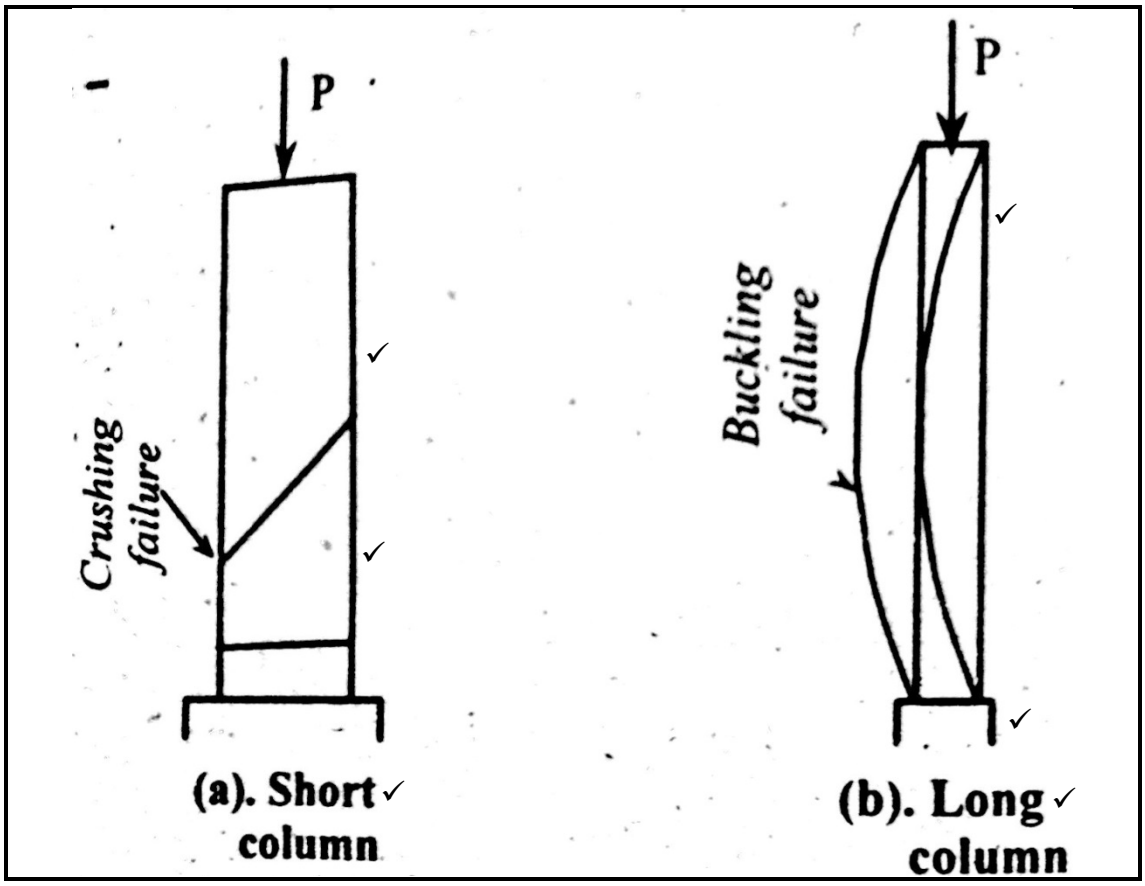
(5 × 1) (5)

4.2
4.2.1 buildings
4.2.2 stress
4.2.3 structural
4.2.4 load
4.2.5 act
4.2.6 nature
4.2.7 point
4.2.8 distributed

(8 × 1) (8)

4.3
- Triangulation involves the use of triangular shapes to give stability to structures.✓ It relates particularly to pin-jointed structures.✓
- Usually these types of structures offer no resistance to bending moments when a force is applied✓ and a diagonal member is therefore added for support.✓
- A simple truss is geometrically stable✓ when it is constructed by starting with a basic triangular element.✓ (Any 1 × 2) (2)

4.4



(3 + 3) (6)

4.5 Concrete is weak in tension.✓ When vertical loads are applied on concrete simply supported beams✓ it has the tendency to sag. Tension then develops on the bottom side✓ and compression on the upper side. Reinforcement is therefore provided on the bottom side to enhance its tension capacity.✓ (4)

[25]

QUESTION 5: INTERNATIONAL SYSTEM (SI) UNITS OF MEASUREMENT

5.1 5.1.1 kg/m³
5.1.2 Pa
5.1.3 m/s

(3 × 1) (3)

5.2 0,72 m; 6 100 cm; 7 204 mm; 0,56 km (2)

5.3 1 hour 48 minutes 50 seconds + 14 minutes 36 seconds✓
= 1 hour 62 minutes 86 seconds✓
= 2 hours 3 minutes 26 seconds✓ (3)

5.4 $= \frac{25}{1\,000 \times 1\,000 \times 1\,000}$
$= 25\checkmark \times 10^{-9}\ m^2\checkmark$ (2)

[10]

QUESTION 6: AREAS AND VOLUME

Outside length = (17,88 × 2) + (10,66 × 2) = 57,1 m✓

Outside area = 57,1 × 3 = 171,3 m²✓

Less doors and windows = (2,2 × 1,2 × 1) + (1,6 × 2 × 8) = 28,24 m²✓

Net outside area = 171,3 – 28,24 = 143,06 m²✓

Inside area = (20 × 3) + (32 × 3) + (22 × 3) + (22 × 3) = 288 m²✓

Less doors and windows = (2,2 × 1,2 × 4) + (1,6 × 2 × 8) = 36,16 m²✓

Net inside area = 288 – 36,16 = 251,84 m²✓

Total area to be painted = 143,06 + 251,84 = 394,9✓ m²✓ **[10]**

QUESTION 7: TECHNICAL DRAWING

7.1 7.1.1 Technical drawing that shows information about heating, ventilating, air conditioning and transportation around the building

7.1.2 Act and discipline of composing drawings that visually communicate how something functions or is constructed

7.1.3 Fully and clearly define requirements for engineered items

(3 × 1) (3)

7.2 7.2.1 Green
7.2.2 Red

(2 × 1) (2)

7.3 A – Earth
B – Compacted ground
C – Concrete footing
D – DPC (damp-proof course)
E – Plaster
F – Lintel
G – Ceiling
H – Beam filling
I – Wall plate
J – Damp-proof membrane

(10 × 1) (10)
[15]

TOTAL: 100

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