



Province of the
EASTERN CAPE
EDUCATION

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NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2025

CIVIL TECHNOLOGY: CIVIL SERVICES MARKING GUIDELINE

MARKS: 200

This marking guideline consists of 13 pages and 2 answer sheets.

QUESTION 1: SAFETY AND MATERIAL (GENERIC)

- 1.1 1.1.1 760 mm x 560 mm (1)
- 1.1.2 3,7 m (1)
- 1.1.3 30° (1)
- 1.1.4 50° (1)
- 1.1.5 510 mm (1)
- 1.2 Any TWO materials that ladders are generally made of:
- Wood
- Aluminium
- Fibreglass (2 x 1) (2)
- 1.3 - Lifting medium
- Power type (2 x 1) (2)
- 1.4 Water-based – provides an elastic, flexible finish (1)
Oil-base – provides a hard, durable finish (1) (2 x 1) (2)
- 1.5 Any THREE properties of the curing process of concrete.
- Surface of cured concrete is durable.
- Improves the protection of the steel reinforcement.
- Curing allows concrete to achieve optimal strength and hardness.
- Avoids cracking where the surface dries out quickly.
- Improves abrasion resistance. (3 x 1) (3)
- 1.6 THREE advantages of electroplating.
- Protects metal against corrosion.
- Improves the engineering and mechanical properties of metal.
- May also be used to increase the thickness of undersized parts. (3 x 1) (3)
- 1.7 Process of applying a plastic finish / coating in powder form (1), using a compressed air spray-gun (1). (2)
- 1.8 Zinc (1)
- [20]**

QUESTION 2: GRAPHICS, JOINING AND EQUIPMENT (GENERIC)

- 2.1 FIGURE 2.1 on page A:
- 2.1.1 Outside door at 2.1.A (2)
 - 2.1.2 Window at 1.1.B (2)
 - 2.1.3 Water closet at 2.1.C (2)
 - 2.1.4 Wash basin at 2.1.D (2)
 - 2.1.5 Single sink unit at 2.1.E (2)
 - 2.1.6 One-way switch – single pole at 2.1.F (2)
 - 2.1.7 Fluorescent light at 2.1.G (2)
 - 2.1.8 Socket outlet at 2.1.H (2)
 - 2.1.9 Grease trap at 2.1.I (2)
 - 2.1.10 Wall-mounted light at 2.1.J (2)
- 2.2 2.2.1 A – Laser level
B – Telescopic staff
C – Tripod (3)
- 2.2.2 Any TWO below:
- Place the laser level in its case directly after use
 - Do not bump the instruments against objects or drop it
 - It must be properly calibrated
 - It must be handled carefully (2 x 1) (2)
- 2.3 2.3.1 The reading on the staff is 1,5 m (1)
- 2.3.2 Minimum = 30 m
Maximum = 200 m (2)
- 2.4 2.4.1 Use a dry, soft cloth, not a cleaning agent or solvent. (1)
- 2.4.2 Remove batteries. (1)
- 2.5 **A** Nut with built-in washer (1)
- B** Wing nut (1)
- C** Domed nut (1)
- 2.6 2.6.1 Rawl bolt (1)
- 2.6.2 **A** – Drill a hole to the required diameter and depth. (1)
- B** – Remove debris and clean the hole thoroughly with a brush or by blowing it. (1)
- C** – Remove the bolt and washer, insert the shield and place the fixture over the hole. (1)
- D** – Insert the bolt with washer through the fixture and tighten to the recommended torque. (1)

2.6.3 Any TWO below:

- It is a strong fastener that resist pull-out failure
- Rawl bolts have excellent carrying capacity and tolerance to a variance in the hole size
- Excellent mechanical properties, such as tensile strength and yield stress.

(2)

[40]

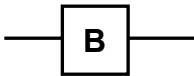
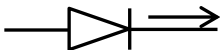

TOTAL SECTION A: 60

QUESTION 3: SAFETY, MATERIAL AND CONSTRUCTION (SPECIFIC)

- 3.1 3.1.1 Similar answer:
- Prevents material or persons falling in
- Identifies a danger zone (1)
- 3.1.2 Similar answer:
- Pipe for extractor fan or blower
- Provides manhole worker of clean air (1)
- 3.1.3 When (1) dangerous fumes/gases are (2) present in the manhole/
confined spaces. (2)
- 3.1.4 Respirator (1)
- 3.2 TWO safety measures when manhole covers are removed:
- Area must be cordoned off
- Warning signs must be posted (2 x 1) (2)
- 3.3 Conditions that poses (1) a threat and may cause (1) harm/injury/death. (2)
- 3.4 3.4.1 True (1)
- 3.4.2 True (1)
- 3.4.3 True (1)
- 3.4.4 False (1)
- 3.4.5 False (1)
- 3.5 Causes accelerated corrosion. (1)
- 3.6 Electrochemical process (1) between two dissimilar metals/alloys (1) (1)
- 3.7 3.7.1 Manhole (1)
- 3.7.2 Benching/Haunching (1)
- 3.7.3 TWO purposes of part A:
- Ensure that sewage spills slide back
- Prevent rats to settle down there (2 x 1) (2)
- 3.7.4 Any THREE positions:
- Before municipal connection
- Every 20 to 25 m in a straight drain line
- At all changes of direction
- At all changes of levels
- At all important junctions (3 x 1) (3)
- 3.7.5 Climb in and out. (1)

- 3.8 3.8.1 **A** – Boning rod
 B – Sight rail (2)
- 3.8.2 ✓ ✓
 40 mm x 8 = 320 mm (2)
- 3.9 3.9.1 Not be placed near the edges of the excavation. (1)
- 3.9.2 Red warning lights (1)
- [30]**

QUESTION 4: COLD WATER SUPPLY, WARM WATER SUPPLY AND TOOLS (SPECIFIC)

- 4.1 Any THREE:
- Colourless
 - Free from suspended material
 - Free from harmful bacteria
 - Pleasant taste
 - Moderately hard
- (3 x 1) (3)
- 4.2 Enable the local authority (1) to calculate the water consumption.(1) (2)
- 4.3 4.3.1 Stopcock (1)
- 4.3.2 Full-way valve (1)
- 4.3.3 Bibcock (1)
- 4.3.4 Non-return valve (1)
- 4.4 4.4.1 Ø 40 / 50 mm (1)
- 4.4.2 Ø 110 mm (1)
- 4.5 135° (1)
- 4.6 4.6.1 **A** - Electronic tap with sensor
B - Demand pillar tap (2)
- 4.6.2 To save water usage. (1)
- 4.6.3 Water only flows (1) as long as the top button is depressed. (1) (2)
- 4.7 Johnson coupling (1)
- 4.8 4.8.1 Balancing device  (2)
- 4.8.2 Non-return valve  (2)
- 4.8.3 Shower  (2)

| | | | |
|------|--|---|-------------|
| 4.9 | 4.9.1 | D | (1) |
| | 4.9.2 | E | (1) |
| | 4.9.3 | G | (1) |
| | 4.9.4 | B | (1) |
| | 4.9.5 | C | (1) |
| 4.10 | 4.10.1 | 50 mm | (1) |
| | 4.10.2 | 300 mm | (1) |
| | 4.10.3 | 1 000 mm | (1) |
| | 4.10.4 | covered | (1) |
| 4.11 | An indication that the pressure-control valve (1) is faulty. (1) | | (2) |
| 4.12 | 4.12.1 | Centrifugal pump | (1) |
| | 4.12.2 | A – Vane B – Discharge nozzle C – Impeller | (3) |
| | 4.12.3 | Any ONE use: - To pump/move liquids/slurries / etc. through pipes - To convert rotational kinetic energy of a spinning impeller to hydrodynamic energy. | (1 x 1) (1) |
| | | | [40] |

QUESTION 5: DRAINAGE AND QUANTITIES (SPECIFIC)

- 5.1 Waste-water – Comes from sink/bath/washbasin/shower.
Soiled water – Comes from water closet. (2)
- 5.2 5.2.1 False (1)
- 5.2.2 False (1)
- 5.2.3 True (1)
- 5.2.4 True (1)
- 5.3 Any similar answer:
So that sewerage can flow freely/not cause obstructions. (1)
- 5.4 Any TWO advantages:
- Long lengths available
- Light in weight
- Easy to join (2 x 1) (2)
- 5.5 Where ground movement might occur/where leakages must be prevented. (1)
- 5.6 50 kPa (1)
- 5.7 5.7.1 Socket (1)
- 5.7.2 Socket-and-spigot joint (1)
- 5.7.3 Keeps out groundwater/sandy soil/roots of trees/seal pipes. (1)
- 5.8 5.8.1 Vent valve/Air admittance valve (1)
- 5.8.2 Valve opens and (1) reduces the vacuum and allows (1) air into the system so that (1) the water can flow away freely/without releasing gases into the building. (1) (4)
- 5.9 When the ground slopes steeply/When the maximum gradient cannot be applied. (1)
- 5.10 5.10.1 Plunger (1)
- 5.10.2 Fill the sink with 3 to 5 cm of water. (1) Place the plunger over the opening. (1) Pump the plunger vigorously down. (1) (3)

- 5.11 To make it free from bacteria/safe for consumption. (1)
- 5.12 5.12.1 PVC (1)
- 5.12.2 PVC (1)
- 5.12.3 PVC (1)
- 5.12.4 1 (1)
- 5.12.5 1 (1)
- 5.12.6 110 mm (1)
- 5.12.7 110 mm (1)
- 5.12.8 110 mm (1)
- 5.12.9 $\pm 6\,600$ mm (1)
- 5.12.10 $\pm 2\,200$ mm (1)
- 5.13 5.13.1 $s^3 = 0,9 \times 0,9 \times 0,9 = 0,729 \text{ m}^3$ (3)
- 5.13.2 $0,729 \text{ m}^3 \times 1\,000 = 729 \text{ l}$ (2)
- [40]**

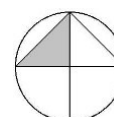
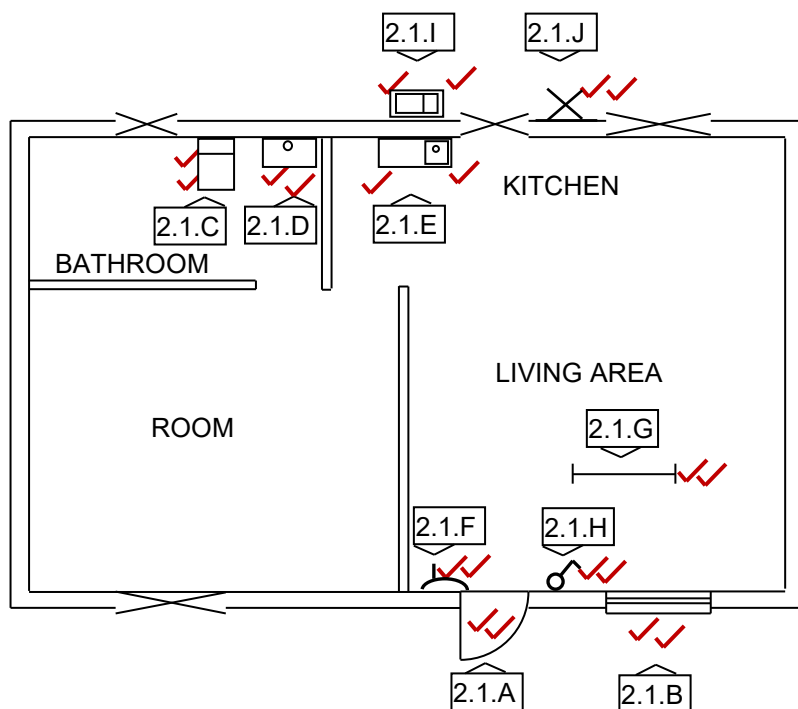
QUESTION 6: GRAPHIC COMMUNICATION, ROOF WORK, STORMWATER AND JOINING (SPECIFIC)

- 6.1 FIGURE 6.1 on ANSWER SHEET B shows the top and front elevations of a cylindrical pipe with a 45° cut-off.
Draw the development of the pipe on ANSWER SHEET B.
Show ALL construction lines. (21)
- 6.2 To seal off the gutter at the ends. (1)
- 6.3 Channel water away from a building / Prevents erosion under downpipe. (1)
- 6.4 Prevent water from damaging buildings / foundations. (1)
- 6.5 6.5.1 Pipe cutter (1)
- 6.5.2 Cutting wheel (1)
- 6.6 6.6.1 True (1)
- 6.6.2 False (1)
- 6.6.3 False (1)
- 6.6.4 False (1)
- [30]**

TOTAAL: 200

| | | | | |
|--------------|----------|-----------------------------|-------------------------|--|
| ANSWER SHEET | A | CIVIL TECHNOLOGY GENERIC | NAME AND SURNAME: | |
| | | | | |

2.1 Use the information on sheet A and complete the floor plan on scale 1 : 100. (20)



| | | |
|---------------------------------------|-----------|--|
| Outside door at 2.1.A | 2 | |
| Window at 2.1.B | 2 | |
| Water closet at 2.1.C | 2 | |
| Wash basin at 2.1.D | 2 | |
| Single sink unit at 2.1.E | 2 | |
| One-way switch – single pole at 2.1.F | 2 | |
| Fluorescent light at 2.1.G | 2 | |
| Socket outlet at 2.1.H | 2 | |
| Grease trap at 2.1.I | 2 | |
| Wall-mounted light at 2.1.J | 2 | |
| TOTAL | 20 | |

