



**higher education  
& training**

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

# **MARKING GUIDELINE**

**NATIONAL CERTIFICATE (VOCATIONAL)**

**NOVEMBER EXAMINATION 2011**

**PLUMBING  
NQF LEVEL 2**

**18 NOVEMBER 2011**

**This marking guideline consists of 5 pages.**

**QUESTION 1: INTRODUCTION TO PLUMBING**

- 1.1 Is the system of pipes that transport water to and from and within a building  
 $\checkmark\checkmark$   
 Involves the work of fitting and repairing water pipes and other plumbing fittings.  
 $\checkmark\checkmark$  (Any ONE) (2)
- 1.2 Solar  
 Medical (2)
- (question confusing accept any reasonable answer)
- 1.3 Condensation  $\checkmark$   
 Precipitation  $\checkmark$   
 Evaporation  $\checkmark$   
 Transpiration  $\checkmark$  (Any TWO) (2)
- (question confusing full 2 marks to learners)
- 1.4 The collection dam  $\checkmark$   
 Water screening  $\checkmark$   
 The mixing tank  $\checkmark$   
 The sedimentation tank  $\checkmark$   
 The carbonation  $\checkmark$   
 Filtration  $\checkmark$   
 Chlorination  $\checkmark$   
 The storage tank  $\checkmark$  (question confusing 1 mark to learners) (8)
- 1.5 YES  $\checkmark$  (1)
- (question confusing 1 mark to learners) [15]

**QUESTION 2: PLUMBING PRINCIPLES AND CODE OF PRACTICES**

- 2.1 2.1.1 Lies among the layers of soil and rock under the ground.  $\checkmark\checkmark$  (2)
- 2.1.2 Lies on top of the ground  $\checkmark\checkmark$  (2)
- 2.1.3 The amount of water that flows through a pipe in the certain amount of Time.  $\checkmark\checkmark$  (2)
- 2.2 If the water is in pipe which is on a downwards slope.  $\checkmark$   
 If the water is forced through a pipe  $\checkmark$  (2)
- 2.3  $P = \rho \times h \times g$   
 $= 1\,000 \checkmark \times 2.5 \checkmark \times 10 \checkmark$   
 $= 2\,500 \checkmark\checkmark$  (6)
- (correct answer 2500Pa or 25kPa)
- 2.4 Code of practice is a set of regulations that all plumbers must follow.  $\checkmark$   
 National Standards is a level of work quality that everyone in a Country must meet. (1)
- [15]

**QUESTION 3: MATERIAL, TOOLS AND EQUIPMENT**

- 3.1 Flexible drain rod ✓  
Plunger ✓ (2)
- 3.2 Soil water fixture ✓  
Wastewater fixture ✓ (2)  
(Accept any sanitary fixture)
- 3.3 - If a roof is wet, wait until is dry ✓  
-Keep the roof clean ✓  
-Wear rubber-soled shoes ✓  
-Nail small pieces of wood to the roof to provide support for your feet ✓  
-Check that there are no loose cords, electric wires or tools ✓  
-Wear a safety harness ✓ (Any FIVE) (5)
- 3.4 PVC pipe is light to work with while Cast iron is heavy. ✓ (1)  
Any answer related to the difference between the two pipes will be correct [10]

**QUESTION 4: PIPE ASSEMBLIES FOR WATER RETICULATION**

- 4.1 Tape measure ✓  
Pipe wrench ✓  
Pipe vice ✓  
Hacksaw ✓  
Stock and die ✓ (Any FOUR) (4)
- 4.2 Manually ✓  
Inside spring ✓  
Outside spring ✓  
Bending tool ✓ (4)
- 4.3 High density polyethylene ✓✓ (2)
- 4.4 Remove all dirt from the pipe ✓  
Put flux onto the end of the pipe ✓  
Measure how much solder you need ✓  
Clamp the pipe into vice ✓  
Slot the fitting over the pipe ✓  
Heat the copper pipe using a gas flame ✓  
Put the end of your solder wire at the joint ✓  
Clean any excess flux ✓ (8)
- 4.5 Measure and mark where you want to cut the pipe ✓  
Cut the pipe by using hacksaw ✓  
File/sand the rough and chamfer edges ✓  
Lubricate it on the end of the pipe ✓  
Slot it into the socket or join ✓ (Question not clear 5 marks to learner) (5)

- 4.6 Monolayer – same layer ✓  
Multilayer – two or three different layers ✓ (2)  
[25]

**QUESTION 5: CUTTING AND JOINING OF METALS**

- 5.1 Soldered joint ✓  
Riveted joint ✓  
Grooved joint ✓ (Any TWO) (2)
- (Question not clear 2 marks to learner)
- 5.2 Overalls ✓  
Aprons ✓ (2)
- (any relevant answer)
- 5.3 Check that the edges are smooth and free from dirt. ✓  
Melts the two edges of the metal and electrode (filler rod) ✓  
Leaves a pool of the melted metal harden ✓  
Flux must be cleaned off once the metal is cool ✓✓ (5)
- (any relevant answer)
- 5.4 True. (1)  
[10]

**QUESTION 6: SET OUT BELOW GROUND DRAINAGE SYSTEMS**

Explain the following drainage terms;

- 6.1 6.1.1 Holds the solids of the sewage while it decomposes naturally. ✓✓  
Most of the liquid (effluent) runs through the septic tank into a  
French drain. ✓✓  
Anaerobic process. ✓✓ (2)
- 6.1.2 To get rid of wastewater and the liquid (effluent) that flows out the  
septic tank ✓✓  
Oxygen makes (effluent) it biodegrade. ✓✓  
Aerobic process. ✓✓ (Any ONE) (2)
- 6.1.3 Dirty water that has been used in a building. ✓✓ (2)
- (Water discharge from any waste water fixture)
- 6.2 At the beginning of the drainage area ✓  
Where a pipe bends ✓  
Where a pipe joins another pipe ✓  
If the pipe is very long ✓ (4)
- ((Question not clear 4 marks to learner))

- 6.3 They should be enough pipes to lead the wastewater to the system. ✓  
 The pipe must be as straight as possible ✓  
 Any bends at an angle of less than 45 must have an access points ✓  
 Pipes must be properly supported. ✓  
 Pipes must be laid so that the water will flow down easily. ✓  
 The join and connections must be watertight. ✓  
 Drain should never run under the building. ✓ (7)  
 (any relevant answer acceptable)

- 6.4 Slope = distance x gradient ✓  
 15 000 mm ✓ x 1/40 ✓  
 = 375 mm ✓✓ (5)  
 (Question not clear 5 marks to learner)

- 6.5 Copy the following TABLE in the ANSWER BOOK and complete by using a tick (✓) to the uses that applies to the basic levelling devices.

USES	WATER LEVEL	SIGHT RAILS	GRADIENT BOARD
Long drain		✓	
Short drain			✓
Steep slope	✓		

(3)  
[25]

**TOTAL: 100**