higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1770(**E**)(A4)T

NATIONAL CERTIFICATE

WATER TREATMENT PRACTICE N3

(8120033)

4 April 2018 (X-Paper)
09:00–12:00

This question paper consists of 4 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
WATER TREATMENT PRACTICE N3
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Write neatly and legibly.

QUESTION 1

1.1 Give ONE word/term for each of the following descriptions .Write ONLY the word/term next to the question number (1.1.1- 1.1.5)

1.1.1 A simple apparatus by which a liquid may be moved from one container to another. (2)

1.1.2 The process of bringing water and air into close contact to remove or modify constituents in the water (2)

1.1.3 Water contains a large amount of dissolved salts which affect the taste of water. (2)

1.1.4 Process that involves reducing the velocity of water in basins so the suspended material can settle out by gravity. (2)

1.1.5 Separation of a substance from a solution or suspension, which is caused by chemical reaction. (2)
[10]

QUESTION 2

2.1 Complete the following reactions :

2.1.1 $NH_3 + HOCl \longrightarrow$ (2)

2.1.2 $MgSO_4 + Ca(OH)_2 \longrightarrow$ (2)

2.1.3 $Ca(OH)_2 + Ca(HCO_3)_2 \longrightarrow$ (3)

2.1.4 $CO_2 + Ca(OH)_2 \longrightarrow$ (2)

2.1.5 $Mg(OH)_2 + CO_2 \longrightarrow$ (2)

2.1.6 $CaSO_4 + Na_2CO_3 \longrightarrow$ (2)

2.2 What is the major purpose of filtration (2)

2.3 Name THREE common characteristics of pumps (3)

2.4 Why carbon dioxide is added to lime-softened water? (2)
[20]

QUESTION 3

3.1 Briefly discuss the impact of low and high concentrations of fluoride on people, cattle and sheep. (6)

3.2 Differentiate between *apparent colour* and *actual colour* in water. (4)

3.3 Briefly describe the purpose of iron and manganese in water. (6)

3.4 Give FIVE golden rules for the effective disinfection of drinking water when using chlorine gas. (5)

3.5 Explain the principle of *floc formation*. (4)
[25]

QUESTION 4

4.1 Name the FIVE stages of the water cycle. (5)

4.2 List FOUR first –aid benefits of the employees after all accidents in the workplace. (4)

4.3 What is the practical significance of chlorine residual? (3)

4.4 How is scale formed in the water? (2)

4.4 Explain the information needed to be supplied when samples are submitted for testing (10)
[24]

QUESTION 5

5.1 What is the purpose of stabilisation in the water? (2)

5.2 Name and compare the TWO major types of corrosion. (4)

5.3 Explain the procedure used when bringing a new sand filter into operation (5)

5.2 Explain the procedure of starting up a chlorinator. (6)

5.3 Give FOUR tests that need to be done in order to calculate stabilisation indices like pH, Langelier and Ryznar. (4)
[21]

TOTAL: 100