higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1740**(E)**(A10)T
NATIONAL CERTIFICATE

WASTE-WATER TREATMENT PRACTICE N3

(8120003)

10 April 2018 (X-Paper)
09:00–12:00

Calculators may be used.

This question paper consists of 5 pages.

Copyright reserved

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
WASTE-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. Start each question on a NEW page.
5. Write neatly and legibly.

Copyright reserved

QUESTION 1

Correct the following statements which are all FALSE. Write only the corrected word or term next to the question number (1.1–1.5) in the ANSWER BOOK.

1.1 Electrical conductivity is measured in volts.

1.2 A valve is a simple apparatus by which a liquid may be moved from one container to another.

1.3 The lithosphere comprises all the water on the earth's surface such as lakes, seas etcetera.

1.4 An atomic number is the sum of the number of protons and neutrons in the nucleus.

1.5 Viruses are simple, colourless, one-celled organisms using soluble food, and are capable of self-reproduction without sunlight.

(5 × 2) **[10]**

QUESTION 2

2.1 Name SIX nutrients required for the growth of microorganisms. (6)

2.2 Name the bacteria that cause the following waterborne diseases:

2.2.1 Cholera

2.2.2 Typhoid fever

2.2.3 Bacillary dysentery

(3 × 2) (6)

2.3 Name the specification that lays down the minimum physical, chemical and bacteriological requirements for the purity of water for domestic supply. (3)

2.4 Chemical toilets are mostly used during events, and in caravans, tourist buses, aircraft and underground in mines.

Explain the mechanism of operation of a chemical toilet. (5)

[20]

Copyright reserved

QUESTION 3

3.1 List FOUR types of valves used for special purposes. (4)

3.2 Define the following terms:

3.2.1 Atom

3.2.2 Compound

3.2.3 Molarity

(3 × 2) (6)

3.3 Name each of the bacteria described below.

3.3.1 They perform best at 55 °C.

3.3.2 They are self-feeding.

3.3.3 They are active in both aerobic and anaerobic systems.

(3 × 2) (6)

3.4 Write brief notes on *ventilated improved pit latrines*. (4)

[20]

QUESTION 4

4.1 Name FOUR tests that measure the strength of sewage in water. (4)

4.2 Define *self-cleansing velocity.* (2)

4.3 Explain the effect of the following factors on the ability of a stream or river to purify itself:

4.3.1 Sunlight

4.3.2 Currents

4.3.3 Temperature

4.3.4 Dilution

4.3.5 Sedimentation

(5 × 2) (10)

4.4 Name FOUR types of screens used in the inlet works of a waste-water purification plant. (4)

4.5 Name TWO ways of disposing of screenings. (2)

4.6 What is the main purpose of sedimentation? (3)

[25]

Copyright reserved

QUESTION 5

5.1 Make a sketch of a rapid gravity sand filter. (13)

5.2 Give FIVE properties of disinfectants. (5)

5.3 Name FIVE tests that are performed on digested sludge on a regular basis. (5)

5.4 State TWO functions of maturation ponds. (2)
[25]

TOTAL: 100

Copyright reserved