higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

WASTE-WATER TREATMENT PRACTICE N3

(8120003)

20 April 2021 (X-paper)
09:00–12:00

This question paper consists of 4 pages.

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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 section on a new page.
5. Use only a blue or black pen.
6. Write neatly and legibly.

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QUESTION 1

1.1 Cavitation normally occurs in both the centrifugal and axial pumps.

1.1.1 Define *cavitation*. (2)

1.1.2 Give FIVE ways to prevent cavitation. (5)

1.2 List SIX components of a globe valve. (6)

1.3 Differentiate between a *safety* and a *relief* valve. (4)

1.4 What is a type of valve with easy maintenance called? (1)

1.5 Define *hydrosphere.* (2)

1.6 List THREE sources of surface run-off. (3)

[23]

QUESTION 2

2.1 Write the names of the elements represented by the following symbols:

2.1.1 Mg

2.1.2 Ca

2.1.3 Ne

(3 × 2) (6)

2.2 Briefly describe the TWO main parts that atoms consist of. (2 × 3) (6)

2.3 Write brief notes on *protozoa*. (6)

2.4 List THREE requirements of domestic water. (3)

2.5 What are the TWO problems encountered in the bucket system? (2)

2.6 List FOUR advantages of stabilisation ponds. (4)

[27]

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QUESTION 3

3.1 Name the composition of sewage. (4)

3.2 How does the flow velocity in a sewer affect the transportation of sewage? (3)

3.3 Describe the TWO functions of a manhole. (2)

3.4 Stoppage is a condition which partially or completely prevents the flow of sewage through a sewer.

Explain what causes stoppage. (2)

3.5 Draw a diagram which represents a typical complete trickling filter system. (10)

3.6 What types of sewage does the activated sludge process treat? (4)
[25]

QUESTION 4

4.1 Chlorine is used as a disinfectant in wastewater and water treatment plants to disinfect the water and kill bacteria. Write brief notes on the following:

4.1.1 Properties of chlorine (7)

4.1.2 Handling of chlorine (5)

4.2 Name FOUR properties of well digested sludge. (4)

4.3 Describe FOUR criteria for drying lagoons. (4)

4.4 State FIVE reasons for keeping records in a plant. (5)
[25]

TOTAL: 100

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