higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1750**(E)**(A10)T

NATIONAL CERTIFICATE

WATER AND WASTE-WATER TREATMENT PRACTICE N1

(8120011)

10 April 2019 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
WATER AND WASTE-WATER TREATMENT PRACTICE N1
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. Sketches must be large, neat and fully labelled.
5. Write neatly and legibly.

QUESTION 1

1.1 State the THREE phases of the water cycle. (3)

1.2 Define each of the following:

1.2.1 Boiling point of water (3)

1.2.2 Freezing point of water (2)

1.3 Draw a flow sheet diagram of an activated sludge system. (10)

1.4 Name TWO physical states in which water can exist and give an example of each. (2)

[20]

QUESTION 2

2.1 Explain why water is essential in supporting life. (6)

2.2 State FOUR recreational activities in which primary contact with water takes place. (4)

2.3 Explain the meaning of each of the following:

2.3.1 Roto dynamic pump

2.3.2 Positive displacement pump

(2 × 2) (4)

2.4 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (2.4.1–2.4.4) in the ANSWER BOOK.

2.4.1 A pump station must always be kept clean.

2.4.2 A pipeline conveys water to consumers.

2.4.3 Pumps are used to raise water from a low level to a high level.

2.4.4 Ensure that a constant flow and pressure protect against corrosion when operating valves.

(4 × 1) (4)

2.5 How should a pipeline be maintained? (2)

[20]

Copyright reserved

QUESTION 3

3.1 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–F) next to the question number (3.1.1–3.1.4) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1.1	Free oxygen available in the system obtained from water	A	buffer
3.1.2	Water containing large amounts of dissolved salts	B	anaerobic
3.1.3	Combination of two or more elements	C	compound
3.1.4	Absence of oxygen in the system	D	covalent bond
3.1.5	Solution of weak acid and base	E	brackish water
		F	aerobic

(5 × 1) (5)

3.2 Name TWO types of natural water sources. (2)

3.3 State THREE basic processes which occur during disinfection. (3)

3.4 List THREE concepts of maintenance principles and procedures regarding dams. (3)

3.5 Name FIVE regular procedures of maintaining pumps and pump stations. (5)

[18]

QUESTION 4

4.1 What is meant by *sedimentation*? (4)

4.2 Give the characteristics of natural unpolluted stream water when self-purification happens. (4)

4.3 List FIVE major causes of water pollution. (5)

4.4 State FOUR major components of tertiary waste-water treatment. (4)

4.5 What happens at a primary sedimentation tank when it becomes endogenous? (5)

[22]

Copyright reserved

QUESTION 5

5.1 Name FIVE problems that occur in a primary sedimentation tank due to lack of food and oxygen. (5)

5.2 Explain the purpose of a maturation pond. (5)

5.3 Briefly explain the advantages of a ventilated improved pit (VIP) latrine. (4)

5.4 Explain the importance of good record keeping in a plant operation. (6)
[20]

TOTAL: 100

Copyright reserved