higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

WATER AND WASTE-WATER TREATMENT PRACTICE N1

(8120011)

11 August 2021 (X-paper)
09:00–12:00

Drawing instruments and nonprogrammable calculators may be used.

This question paper consists of 5 pages.

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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. Start each question on a new page.
5. Only use a black or blue
6. Write neatly and legibly.

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QUESTION 1

1.1 Explain the following processes in the water cycle:

1.1.1 Precipitation

1.1.2 Storage

1.1.3 Evaporation

1.1.4 Transpiration

1.1.5 Condensation

(5 × 2) (10)

1.2 State whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 Water is a clear liquid that has smell, colour and taste.

1.2.2 Informal settlements can cause pollution to water because they are normally found near or on the banks of rivers and streams.

1.2.3 Chemicals that are sprayed on crops could cause water pollution.

1.2.4 Wetlands do not act as filters for water flowing into a river.

1.2.5 Planting trees near wetlands can restrict water flow.

1.2.6 You should flush oil, chemicals and medicines down a toilet or pour them in a sink or down a drain.

1.2.7 Power stations and industries use water as a coolant.

1.2.8 Effluent from factories cannot be used for watering of lawns.

1.2.9 Humans and animals should come into direct contact with effluents.

1.2.10 Chlorination is the process where chlorine is added water to remove odour and kill bacteria.

(10 × 1) (10)

[20]

QUESTION 2

2.1 Name FIVE uses of domestic water in a household. (5)

2.2 Indicate whether the following statements on the addition of flocculent and flash mixing when treating water are TRUE or FALSE. Write only 'True' or 'False' next to the question number (2.2.1–2.2.5) in the ANSWER BOOK.

2.2.1 Activated silica is used as floc-aid.

2.2.2 The formation of flocci occurs after the addition of aluminium sulphate.

2.2.3 The correct PH of treated water is between 5 and 7.

2.2.4 Addition of ferric salts will increase flocculation.

2.2.5 Carbon and calcium carbonate are added to activate floc-aid.

(5 × 1) (5)

2.3 Sketch a labelled flow chart of an activated sludge system. (10)

[20]

QUESTION 3

3.1 Explain what is needed in the catchment areas and raw water reservoirs for the protection of water supply services. (4)

3.2 Define the following:

3.2.1 Pipeline

3.2.2 Penstock

3.2.3 Valve

3.2.4 Weir

3.2.5 Pumping station

(5 × 2) (10)

3.3 Name FIVE major causes of water pollution. (5)

[19]

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QUESTION 4

4.1 Explain why the Water Services Act was adopted. (10)

4.2 The sanitation process is done in THREE stages.

Name the THREE stages. (3)

4.3 List FIVE provincial and local laws that confirm the standards laid down by legislation and national standards (SANS/SABS). (5)

4.4 Name FOUR types of water. (4)

[22]

QUESTION 5

5.1 Explain the purpose of using meter readings in a treatment plant. (4)

5.2 Explain the importance of good record keeping. (6)

5.3 List FIVE types of personal protective equipment (PPE) used to protect operators from hazards during their daily duties. (5)

5.4 Name FOUR non-water borne sewerage systems. (4)

[19]

TOTAL: 100

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