



NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES and NATURAL RESOURCES

DEPARTMENT OF HEALTH SCIENCES

QUALIFICATION : BACHELOR OF ENVIRONMENTAL HEALTH SCIENCES	
QUALIFICATION CODE: 08 BOHS	LEVEL: 5
COURSE NAME: WATER AND SANITATION	COURSE CODE: WAS512S
DATE: NOVEMBER 2022	SESSION: 1 ST Opportunity
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER	MRS MOUYELELE HAUFIKU
MODERATOR:	MS CHARMAINE JANSEN

INSTRUCTIONS	
<ol style="list-style-type: none">1. Read all the questions carefully before answering2. Marks for each question are indicated at the end of each question3. Number the answers clearly.4. Please ensure that your writing is legible, neat and presentable	

PERMISSIBLE MATERIAL: NONE

THIS QUESTION PAPER CONSISTS OF 6 PAGES

(Including this front page)

SECTION A [20 MARKS]

QUESTION 1

[10]

1.0 Define the following terms/concepts in the context of Water and Sanitation.

- 1.1 Groundwater [1]
- 1.2 Water – table [1]
- 1.3 Permeable [1]
- 1.4 Distillation [1]
- 1.5 Reverse Osmosis [1]
- 1.6 Faecal Oral route [1]
- 1.7 Waterborne diseases [1]
- 1.8 Water – washed diseases [1]
- 1.9 Water- based diseases [1]
- 1.10 Sewage [1]

QUESTION 2

[10]

2.0 Choose the correct answer from the alternatives given. Write the question number with the correct letter to the answer. [1x10 = 10 marks]

2.1 According to the World Health Organization (WHO) the water source has to be within. [1]

- a) 1000 m of the house
- b) 1500 m of the house
- c) 200 m of the house
- d) 3000 m of the house

2.2 Water that is free from pathogens which are introduced to the water through faeces, dirty containers and safe for drinking is called.

[1]

- a) Palatable water
- b) Potable water
- c) Raw water
- d) Colourless water

2.3 This hardness is due to the presence of carbonates of calcium and magnesium and can be removed by boiling.

[1]

- a) Permanent hardness
- b) Acute hardness
- c) Reversible hardness
- d) Temporary hardness

2.4 All the following are disadvantages of ground water, except.

[1]

- a) Usually requires pumping for extraction
- b) Likely to be contaminated by dust and dirt
- c) May have a high level of bicarbonate, carbonate and chloride
- d) Poor in oxygen content

2.5. This bacteria will be one of the first bacteria that will be present in the water should contamination occur, and they will be in much larger quantities than others.

[1]

- a) Coliform
- b) Giardia lamblia
- c) Cryptosporidium
- d) Hepatitis A

2.6 _____ are flagellated protozoa that are parasitic in the intestines of humans and animals.

[1]

- a) Coliform
- b) Giardia lamblia
- c) Cryptosporidium
- d) Hepatitis A

2.7 _____ a parasite that is spread by the transmission of ocysts via drinking water which has been contaminated with infected faecal material.

[1]

- a) Coliform
- b) Giardia lamblia
- c) Cryptosporidium
- d) Hepatitis A

2.8 This primary process in waste treatment consists of a fixed screen and a moving cutter to grind solids which are able to pass through the screen into smaller pieces about 0.3 cm in size or smaller. [1]

- a) Screening
- b) Grit removal
- c) Comminution
- d) Sedimentation

2.9 The waste stabilization pond that has a mixture of aerobic and anaerobic conditions is known as. [1]

- a) Anaerobic
- b) Facultative
- c) Maturation
- d) Waste

2.10 This general term is used to refer to the contents that comes out of toilets, its contents may include faeces, urine, paper condoms , tampons and any another materials that people find convenient to flash down the toilets. [1]

- a) Domestic sewage
- b) Storm water runoff
- c) Grey water
- d) Black water

SECTION B [20 MARKS]

QUESTION 3

3.0 Interpret the following abbreviations in the context of water and sanitation [10]

3.1 WASH [1]

3.2 CLTS [1]

3.3 MAWF [1]

3.4 NGO [1]

3.5 VIP [1]

3.6 WHO [1]

3.7 PHAST	[1]
3.8 WATSAN	[1]
3.9 WPC	[1]
3.10 WWTP	[1]

QUESTION 4

4.1 Mention any five (5) disadvantages of ground water	[5]
4.2 Water sources can be classified as protected or unprotected. Outline any five (5) characteristics of a protected water source.	[5]

SECTION C [60 MARKS]

QUESTION 5 [20]

5.0 One of the main duties of a water supply provider is to ensure that a safe and sufficient water supply is available to all segments of a community at a reasonable cost. This may mean seeking new water sources to satisfy demand. Identifying potential new sources and assessing their viability prior to development is a skilled technical task that require several different factors to be assessed.

5.1 Name and explain the **seven (7)** factors to consider before developing a water source. [14]

5.2 State any **six (6)** factors to consider in the selection of a site for constructing waste stabilization ponds. [6]

QUESTION 6 [20]

6.0 Elaborate on the **five (5)** main objective of water treatment and describe the large scale surface water treatment process. [20]

QUESTION 7

[20]

7.1 There is an outbreak of cholera at your village. As an upcoming Environmental Health Practitioner (EHP), you are asked to give health education on cholera, elaborating on its definition, causes, how it is transmitted and prevention methods.

[10]

7.2 Explain how you would sample water from the tap

[10]

TOTAL MARKS = 100