higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

WATER AND WASTE-WATER TREATMENT PRACTICE N1

6 APRIL 2018

This marking guideline consists of 5 pages.

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QUESTION 1

1.1
- To soften the water
- To make water colourless
- To make water odourless
- To remove suspended solids
- To remove pathogenic microorganisms (5)

1.2
- Turbidity
- Colour
- Taste
- Odour (4)

1.3
1.3.1 G
1.3.2 E
1.3.3 D
1.3.4 C
1.3.5 B
1.3.6 A
(6 × 1) (6)

1.4
- High dissolving power
- Has three phases
- High surface tension (3)

1.5
- Temperature
- Wind speed
- Sun
- Air pressure (4)

[22]

QUESTION 2

2.1
- Pump
- Pump station
- Valve
- Pipeline
- Reservoir
- Distribution system (Any 5 x 1) (5)

2.2
- Domestic
- Industrial processes
- Irrigation
- Production of power
- Transportation
- Recreation (Any 5 x 1) (5)

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2.3
- Water can be taken from rivers, lakes, springs and wells.
- Water is transported by pipelines, tunnels, canals and aqueducts to reservoirs.
- Water is then treated to make it acceptable for domestic use.
- Water is then supplied to the consumers by means of a network of pipes (reticulation systems). (4)

2.4
- Used for cooking, drinking, laundry sanitation, washing, etc.
- Surface water and underground water could be polluted by sewage, industrial waste, dead plants.
- Large filtration plants are used to purity water and kill diseases.
- The supply of potable water is very costly but very necessary for the people's health. (4)

2.5
- Animals are driven away.
- The natural drainage system is affected.
- Overpopulation of harmful insects is caused.
- Results in erosion.
- Water is needed for the body to function well.
- Water should be replaced that is lost during respiration. (Any 4 x 1) (4)

[22]

QUESTION 3

3.1
3.1.1 False
3.1.2 False
3.1.3 False
3.1.4 True
3.1.5 True

(5 × 1) (5)

3.2
3.2.1 It is due to calcium and magnesium salts.

3.2.2 Combination of one or more elements and can exist as a gas, liquid or solid.

3.2.3 The hydrogen ion or hydroxide ion concentration.
OR
Degree of acidity and alkalinity of a solution

3.2.4 The quantity of matter something contains and is measured in g, kg and ton.

3.2.5 Convenient unit of objects with a mass that is equal to or more than 1 000 kg

(5 × 2) (10)

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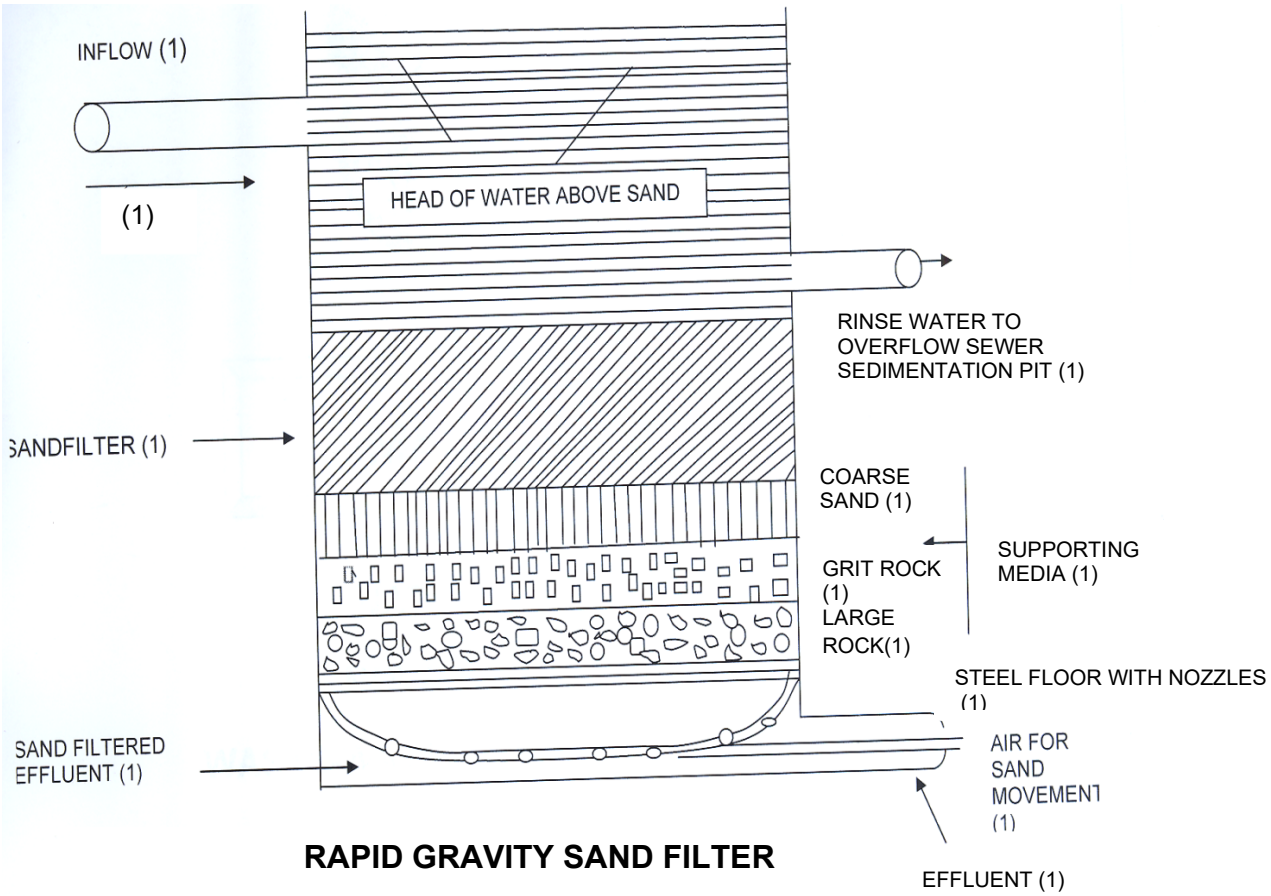
3.3
- Raw water
- Pump station/screen
- Aeration (to remove Fe and Mn)
- Chemical dosing Cl_2,$Al_2(SO_4)_3$/$Ca(OH)_2$
- Rapid mixing

(5)
[20]

QUESTION 4

4.1



RAPID GRAVITY SAND FILTER

(Labelling) (10)
(Drawing) (2)

4.2
- Degradation
- Active decomposition
- Recovery
- Clear water

(4)

4.3
- Fertilizer
- Chemical from dipping and pesticides
- Animals sewage
- Erosion of exposed top soil

(4)
[22]

QUESTION 5

5.1
- Pre-treatment
- Primary treatment
- Secondary treatment
- Tertiary treatment (4)

5.2
- To determine the chemical dosing concentration
- To calculate the amount of water produced
- To identify the loss through the plant
- To identify the distribution through the system
- To calculate the cost of the production water
- To determine any reduction of pump efficiency
- To measure flow rate and overloading
- To monitor changes in delivery such as determination of pipeline blockages or leakages (Any 4 × 1) (4)

5.3
- Unusual noises
- Unusual vibration
- Hot smell from motor
- Sparking of brushes
- Lack of normal speed
- Carbon should be cleaned weekly
- Motor should be lubricated annually (Any 4 × 1) (4)

5.4
- Two leather safety belts and ropes
- Lead acetate papers for sulphur (S) tests
- Gas mask (Any 2 × 1) (2)

[14]

TOTAL: 100

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