

[CT4471-OCW DRINKING WATER TREATMENT 1 \(2006-2007\) \(4383-2006OCW\)](#) > [CONTROL PANEL](#) > PREVIEW ASSESSMENT: MEMBRANE FILTRATION

Preview Assessment: Membrane filtration

Name Membrane filtration

Instructions Answer the questions in small groups (2 persons). Consultation of your lecture notes and other sources is allowed.

Multiple Attempts This Test allows multiple attempts.

Force Completion This Test can be saved and resumed later.

▼ Question Completion Status:

Question 1

10 points

[Save](#)

Membrane filtration can be divided into two categories based on:

- the length of the membrane
- the diameter of the membrane
- the amount of membranes
- the pore sizes in the membrane

Question 2

10 points

[Save](#)

The removal of suspended solids is measured as a percentage of the feed concentration.

- True
- False

Question 3

10 points

[Save](#)

A removal of one log unit corresponds with:

- 10%
- 50%
- 90%
- 99%

Question 4

10 points

[Save](#)

MWCO is defined as the MW of spherical molecules which are 50% rejected by the membrane pores.

- True
- False

Question 5

10 points

[Save](#)

Micro filtration does remove viruses, ultra filtration doesnot remove viruses.

- True
- False

Question 6

10 points

Save

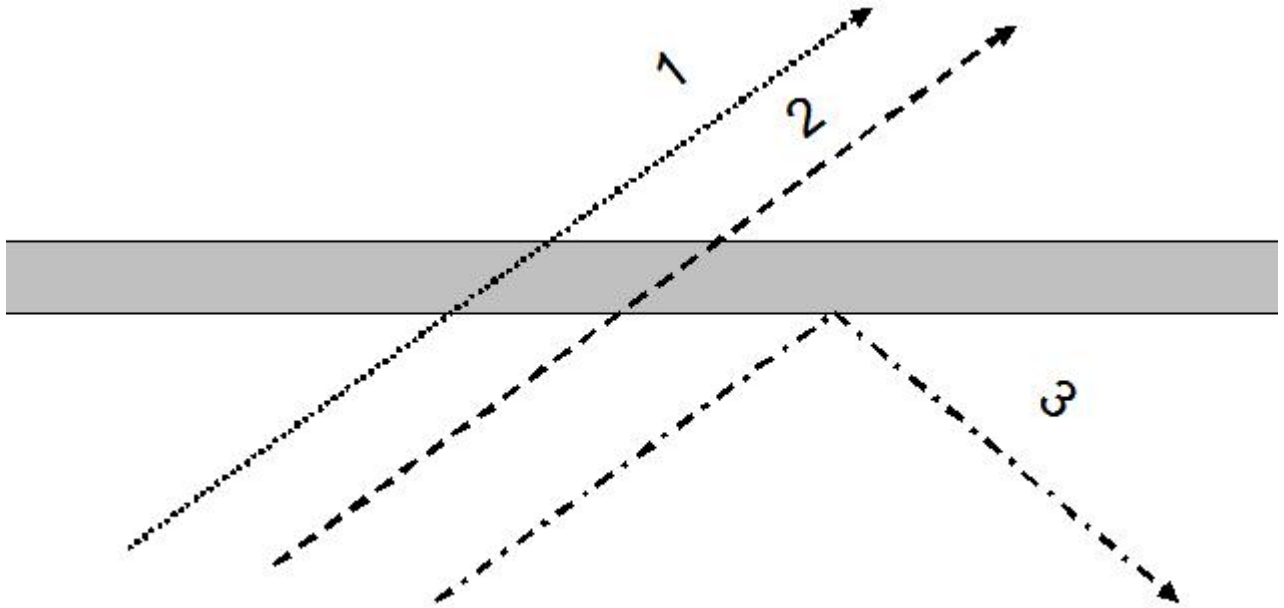
In a membrane are three water streams. Match the name with the water.

- dirty water or raw water
- water passing the membrane
- water with rejected particles

- A. permeate or product water
- B. concentrate or retentate
- C. feed water

Question 7

Which water flow belongs to line 3?



- water
- colloids
- suspended solids

Question 8

10 points

Save

Which of the following is true for dead end filtration?

- the water flux increases if the pressure is constant
- the water flux decreases if the pressure is constant
- the water flux is constant and the pressure increases
- the water flux is constant and the pressure decreases

Question 9

10 points

Save

the period of permeation is called filtration run.

- True
- False

Question 10**10 points**[Save](#)

With dead end filtration the recovery of a filter run is less than 100%.

- True
- False

Question 11**10 points**[Save](#)

Each degree temperature (°C) increase gives (a) (b) flux at the same pressure.

What is (a) and what is (b)?

- (a) 10% (b) more
- (a) 10% (b) less
- (a) 3% (b) more
- (a) 3% (b) less

Question 12**10 points**[Save](#)

The trans membrane pressure (TMP) is the feed pressure.

- True
- False

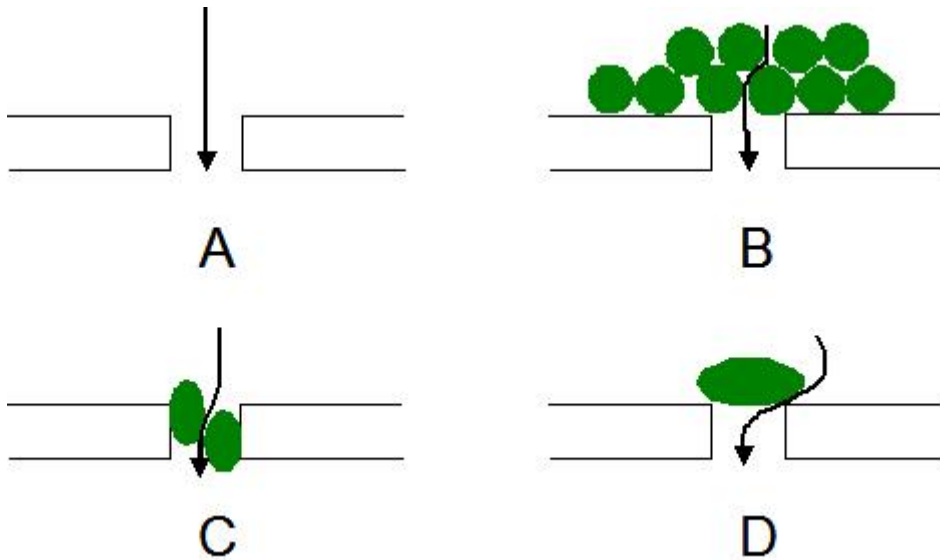
Question 13**10 points**[Save](#)

The pressure of the feed side of the MF/UF membrane is typically:

- 0.1 bar
- 0.5 bar
- 1 bar
- 5 bar

Question 14**10 points**[Save](#)

In the figure different resistances are given. Which resistance belongs to which letter?



- pore blocking
- adsorption in the pores
- membrane resistance
- cake resistance

- A. A
- B. B
- C. C
- D. D

Question 15

10 points

Save

When the flow has a low Reynolds number, accumulated compounds may be removed from the membrane surface.

- True
- False

Question 16

10 points

Save

For forward flush applies the smaller the diameter of the membrane, the smaller the velocity needed for cleaning the membrane.

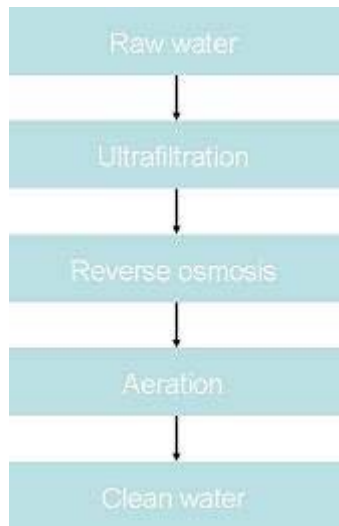
- True
- False

Question 17

10 points

Save

An industry treats surface water to process water by means of a double membrane filtration. IN the schedule below a schematic drawing of the treatment scheme is given. Which of the following quality parameters are changed after this treatment?



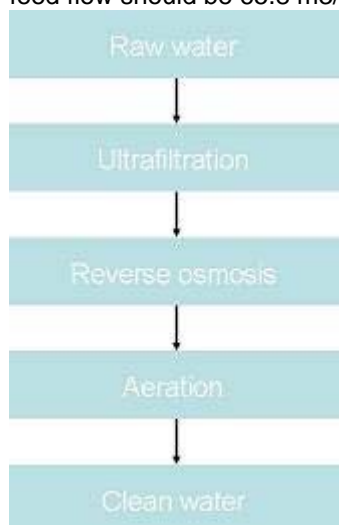
- Turbidity
- Suspended solids
- Na⁺
- Ca²⁺
- HCO₃⁻
- SO₄²⁻
- CO₂
- O₂
- pH
- Sum of pesticides

Question 18**10 points**

Save

An industry treats surface water to process water by means of a double membrane filtration. In the schedule below a schematic drawing of the treatment scheme is given.

The recovery of the reverse osmosis is 80% and therecovery for the ultrafiltration is 95%. The feed flow should be 65.8 m³/h to produce 50m³/h of permeate.



- True

False

Question 19

10 points

Save

Match.

- The recovery of the ultra filtration is limited to 95% because
- The recovery of the reverse osmosis is limited to 80% because

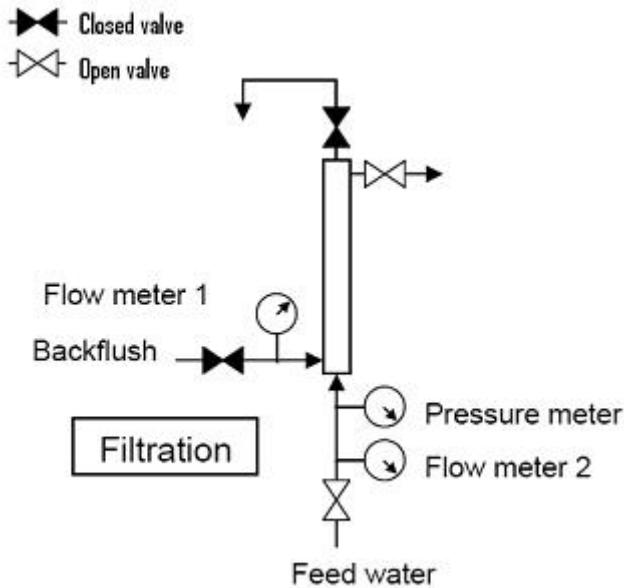
- A. permeate is needed for cleaning of the installation.
- B. at higher recoveries scaling can occur.

Question 20

10 points

Save

In the ultrafiltration installation two flow meters (feed flow and backflush flow) and one pressure meter (in the feed flow, just before entering the module) are installed. The permeate flows out of the module at atmospheric conditions. The permeate flux of the module is $100 \text{ l}/(\text{m}^2 \cdot \text{h})$. In a membrane module 615 membranes of 5.2 mm diameter are placed. The length of the module is 3 meter and the membrane module has an effective membrane area of 30 m^2 . What will the values be read on all three meter during filtration (see picture)



- Flow meter 1
- Flow meter 2
- Pressure meter

- A. 0 m3/h
- B. 3 m3/h
- C. 7.5 m3/h
- D. 1 bar
- E. 2.5 bar

Question 21

10 points

Save

Which of the sort of air bubbles in water gives the best cleaning?



- A
- B
- C

Question 22

10 points

Save

The investments costs are minimal with modules with the highest specific surface area.

- True
- False

Question 23

10 points

Save

Coagulant dosing is used to make less particles, so less particles will accumulate on the membrane.

- True
- False

Question 24

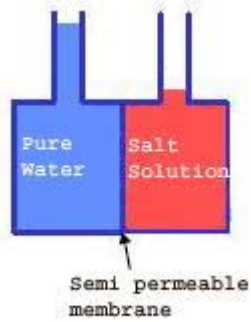
10 points

Save

The water is flowing through the membrane. How is it flowing? Match the arrows with the pictures.



- A.
- B.
- C.

**Question 25****10 points**[Save](#)

Reverse osmosis elements produce a maximum of 10% of the feed flow as permeate.

- True
- False

Question 26**10 points**[Save](#)

The osmotic pressure in the concentrate is higher than in the feed.

- True
- False

[Save](#)[Submit](#)