Menoufiya University
Faculty of Engineering, Shebin Elkom
Civil Engineering Department
Final 2ᵈ Sem. Exam, 2014/2015

CVES19: Water Treatment
Level: 500   Total mark=100
Time: 3.0 hours
Wed 10 / 6/2015

Try in the following questions

Question One   (30 Marks)

a) Compare with using sketches among the common modern type of sedimentation used in water treatment.

b) Discuss with using sketches the different types and methods Coagulation process in water treatment.

c) Design Tube-Setller basins and their inlet, outlet and sludge structures for a water treatment plant of 200,000 m^3/day.

- Draw plan and sections for the designed basin with its structures.

Question Two   (30 Marks)

a) Discuss the phenomena of *Negative head* or 'clogging head' of filtration processes.

b) Design the filtration beds, washing and connecting pipes in a water treatment plant of 125,000 m^3/day with rate of filtration of 180 m^3/m^2/day.

-Draw plan and sections for the designed filtration house with its connecting pipes.

c) "The tri-halo-methane as a disinfection by product in water treatment has a bad health effect", Explain the common reasons of formation and methods for its reduction or removal.

Question Three   (20 Marks)

a) Discuss with using sketches the common methods for removal of Hardness, Iron and Manganese in water supply.

b) Design a water softening plant working 16 hrs/day, of flow 4000 m^3/day, raw water hardness 450 mg/l, allowable hardness in treated water 40 mg/l, ion exchange capacity of used resin 20 kg/m^3, capacity of regeneration salt 50 kg/m^3.

Question Four   (20 Marks)

a) Discuss the different methods employed in water desalinations.

b) Explain in details the use of **Reverse Osmosis** for sea water desalination (idea, advantage, disadvantages, flow diagrams)

With my best wishes   *Prof. M. Elsheikh*

This exam contribute by measuring in achieving Program Academic Standards NARS			
Question No.	Q1-a, Q1-b, Q2-a.	Q2-c, Q3-b	Q1-c, Q2-b, Q4-b	Q3-a, Q4-a
Skills	DK3	DI2, DI5	DP1	DT4
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills