

Menoufia University
Faculty of Engineering, Shebin El-Kom
Civil Engineering Department
First Semester Examination, 2016-2017
Date of Exam: 18 / 1 / 2017



Subject: Ground water hydrology
Code: CVE 562
Year : diploma
Time Allowed : 3 hours
Total Marks : 100 marks

Answer the following questions clarify your answer with drawing.(it is allowed to use dewatering tables)

Question 1 (30 marks)

1. What are the difference between aquifers, aquitards and aquicludes?
2. Discuss with drawing the relationship between pore water pressure and the depth with respect to the ground water table.
3. Discuss the principle components of ground water lowering well.
4. Define the following:
 - Radial flow to well
 - Zone of influence
 - Well losses
5. Suggest a suitable method of dewatering a multi-layer soil with different parameters.
6. Discuss the interaction between pore water pressure, effective stress, and instability.
7. Discuss the differences between exclusion and dewatering techniques, and what are the different methods of each technique.
8. How can ground water be controlled for tunnels and shafts?

Question (2) (50 marks)

1. What are the purpose and the planning of site investigation?
2. Discuss the stages of site investigation.
3. What are the different methods which used in determination of ground water conditions?
4. Discuss the different methods which used for determining of permeability.
5. A rectangular excavation is to be made with dimension 40*20m with depth 10m, the excavation is to have vertical sides supported by sheet-piles, the aquifer is confined aquifer consist of medium sand extend from 11m to 20m the confining layer above the aquifer is stiff clay, the maximum piezometric level in the aquifer is 2m below the ground level, it is required :-
 1. Design the dewatering system and make all checks.
 2. Calculate the pressure distribution on the sheet-pile wall.
 3. If you know that the building is tower of 10 stories with 1.1m R.c raft foundation and 0.4 m P.C raft and a replacement layer of 1.0 m, the foundation take a month to be constructed, and the underground floor column take 20 days and underground slab take 17 days and each floor ta' 40 days calculate the time of dewatering.

Question (3) (20 marks)

1. Discuss the uses of Sump pumping.
2. Make a comparison between well point and deep well system.
3. What are the main types of pump?
4. What are the main effects of dewatering?
5. How are the problems due to dewatering can be eliminated?

With our best wishes Dr/ Esam Helal

This exam measures the following ILOs

Question Number	Q1-1,2 Q3-1	Q1-3,4	Q1-5 Q3-2	Q1-6,7	Q1-8 Q3-4,5	Q2-1	Q2-3	Q1-7	Q2-5	Q2-2	Q2-3	Q2-5	Q2-5		
Skills	a-2-1	a5-2	a-2-4	a-2-4	a-2-4	a-2-1	b-2-2	b-1-1	b-1-1	b-2-2	b-2-2	c-1-1	c-1-1		
	Knowledge & Understanding Skills						Intellectual Skills						Professional Skills		