

Menoufia University
Faculty of Engineering
Shebin El-Kom
Second Semester Examination
Academic Year: 2013-2014



Department: Civil Eng.
Year: Graduate Diploma
Subject/Code: Planning for Water &
Sanitation Projects / **CVE 525**
Time Allowed: 3 hours
Date: 15 /6/2014

Total Mark

[100 Marks]

Answer all the following Questions (provide sketch drawings as possible)

Marks

Question (1)

[30]

- a) Discuss the different criteria selected for water networks design and provide typical drawings of various valves and accessories considered during design (15)
- b) Discuss the different criteria selected for sewage networks design and provide typical drawings of various valves and accessories considered during design (15)

Question (2)

[20]

What are the main consideration for the construction of water supply networks and sewerage networks, differentiate between the construction requirements of the two systems and provide typical details for crossing works. (20)

Question (3)

[30]

Discuss with appropriate graphs the following aspects in water and sanitation projects defining their possible impacts on project design:

- (a) Various pipe materials used in water supply and sewerage networks.....(10)
- (b) Water consumption rates in different countries worldwide..... (5)
- (c) Typical breakdown of water consumption for domestic purpose.....(5)
- (d) Compare a typical water consumption versus sewage discharge curves.....(5)
- (e) Draw curve showing typical hourly variation in sewage flows and loads.....(5)

Question (4)

[20]

- (a) Draw typical flow diagram for water treatment **and** wastewater treatment plants.. (10)
- (b) Provide typical cost breakdown of a WWTP and provide your comments on it.... (10)