

EXAMINATION AND EVALUATION DIVISION DEPARTMENT OF POLYTECHNIC EDUCATION (MINISTRY OF HIGHER EDUCATION)

CIVIL ENGINEERING DEPARTMENT

FINAL EXAMINATION
JUNE 2012 SESSION

CN203: WATER SUPPLY ENGINEERING

DATE: 21 NOVEMBER 2012 DURATION: 2 HOURS (8.30AM – 10.30 AM)

This paper consists of SIX (6) pages including the front page. Section A: Objective (20 questions – answer all) Section B: Essay (4 questions – answer 3 questions)

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(CLO stated at the end of each question is referring to the learning outcome of the topic assessed. The CLO stated is only for lectures' references.)

SECTION A

OBJECTIVES (40 marks)

Instruction: This section consists of 20 objective questions. Write your answer's in the answer booklet.

- 1. ______is the amount of water supply project which is expected to meet community needs

 2. ______percent of total water supply is use for domestic purpose.

 3. The main components hydrologic cycle are surface runoff, _______. CLO 2: C1 _______, evaporation.

 4. Main microbes found in the raw water are bacteria, algae, viruses and _______. CLO 2: C1 and ______.
- 6. is mixed with treated water to kill bacteria. CLO 3 : C4
- 7. Mixing of chemicals with raw water to fine particles and colloidal material together into large precipitates mentioned

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8.	Chemicals used in the coagulation process called alum or	CLO 3 : C2	
9.	is the process of channeling the water through layers of rock and sand	CLO 3: C4	
10.	is the final process in water treatmen	nt CLO 3 : C4	
11.	Frictionoccurs because the water particles the surface of the pipe.	to CLO 2 : C4	
12.	Demand per capita is theaverage demand for use of a person in a day.	the CLO 2 : C1	
13.	Assumptions used in the method are population increasing at the fixed rate.	CLO 2 : C3	
14.	is the quantity of oxygen required by the oxidizing agents for oxidation of all organic matter into carbon dioxide, water and ammonia	CLO 3 : C4	
15.	system simple, low cost of installation and minimum use of pipe.	n CLO 2 : C4	
	Fine filter is made up of nets attached to particles of size less than 5 mm is blocked from entering pumping system of the treatment plant. (True or False)	s CLO 3 : C4	

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17. The main purpose of aeration in water treatment process is to increase the dissolved oxygen content in water.

CLO 3: C1

(True or False)

18. Gravity method is used when the water supply is the same level or higher than the level of storage tanks.

CLO 2: C3

(True or False)

19. Valve necessary to control the water flow, stop the flow of water, release the air trapped in the water, balancing pressure in the pipe and remove the dirt in the pipes.

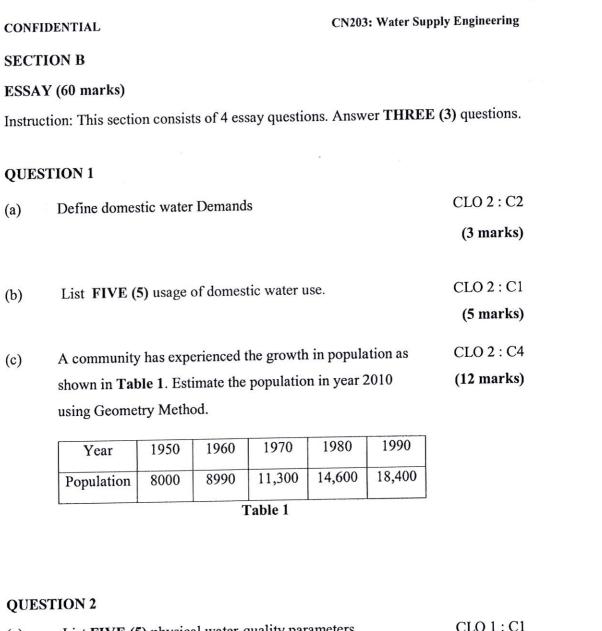
CLO 2: C4

(True or False)

20. The purpose of coagulant agent in water treatment process is to eliminate the germs_in the water.

CLO 2: C3

(True or False)



(a)	List FIVE (5) physical water-quality parameters.	CLO 1 : C1
		(5 marks)
(b)	Define "hardness" of water.	CLO 1 : C2
		(3 marks)
(c)	Explain briefly TWO (2) classification of hardness.	CLO 1 : C3
		(6 marks)
<i>(</i> 1)	Discuss briefly the impacts of hardness.	CLO 1 : C4
(d)	Discuss offerry the impacts of natures.	(6 marks)

QUESTION 3

(a) Define aeration. CLO 3 : C2

(3 marks)

(b) State FOUR (4) methods of aeration of raw water in water treatment process.

(6 marks)

(c) With an appropriate diagram, describe the deposition CLO 3 : C4 process using a rectangular sedimentation basin.

(11 marks)

QUESTION 4

(a) List SEVEN (7) sources of Non Renewable Water (NRW). CLO 2: C1

(7marks)

(b) Describe briefly the advantages and disadvantages of water distribution network system using a grid system.

(7 marks)

(c) Explain briefly how visual inspection undertaken to detect CLO 2: C4 leak in the delivery pipe.

(6 marks)