



ASSIGNMENT #5

CE4113 ENVIRONMENTAL ENGINEERING

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DUE ON: 31 AUGUST 2018 (FRIDAY)

INSTRUCTION. WRITE YOUR COMPUTATIONS/ANSWERS ON A SHORT/LETTER BOND SIZE PAPER (BACK TO BACK). HANDWRITTEN USING A PERMANENT INK (NOT PENCIL), SHOW YOUR SOLUTION WITH PROPER UNIT OF MEASUREMENTS. ENCIRCLE YOUR FINAL ANSWER OR ENCLOSE YOUR ANSWER IN A BOX.

1. The local government units of Sibuyan and Tablas Islands received financial assistance from the World Bank to improve the waste collection and disposal system in Romblon. It was proposed to purchase new units of dump trucks to meet the current demand of these islands. However, the purchase or acquisition of the new trucks will be done per island. Due to accessibility and road network problem, the truck can only collect the solid waste from the 70% of their population and the schedule of the collection is Monday-Wednesday-Friday. Determine or compute the following.

- (a) The total solid waste generation per island (cubic meters per day)
- (b) The number of trucks (30 cubic meters capacity each) needed per island if one truck can collect once a day.

Municipality	Population (2015)	Assumption
Sibuyan Island		a. Solid waste generation rate of 1.5kg/capita/day. b. Refuse compaction rate of the dump truck is 375 kg/cubic meters c. One dump truck is 30 cubic meters capacity and collects once a day. d. ID = is the last two digits of your student Identification Number.
San Fernando	23,271 minus ID	
Cajidiocan	21,861	
Magdiwang	14,142	
Tablas Island		
San Andres	15,589 plus ID	
Odiongan	45,367	
Ferrol	6,964	

2. The mayor proposes to improve its present solid waste collection and disposal system for its constituents. The proposed system identified the purchase of a new truck to meet the current demand of the municipality. The truck can collect all the garbage from the 5 barangays during the 5-day work week (Monday to Friday), what is the capacity of the truck sufficient enough to collect the garbage? The municipality with 5 barangays have population enumerated below. Assume that the truck is able to compact the refuse to 300 kg/cubic meter. **ID = is the last two digits of your student identification number.**

Barangay Name	Population (resident)	Total Volume (kg) per day
Brgy Roxas	550 + ID	700
Brgy Lobredo	400	500
Brgy Duterte	600	450
Brgy Aquino	450	500
Brgy Marcos	350	550 + ID

3. A certain town (Municipality A) with a population of 10,000 people resides next to a krypton mine and there is concern that the emission from the krypton smelter have resulted in adverse effects. Specifically, kryptonosis seems to have killed 10 of the town's inhabitants last year. A neighbouring town (Municipality B) has 20,000 people and is far enough from the smelter to not be affected by the emissions, and only two people last year died of kryptonosis. The table below shows the number of deaths in Municipality A and their causes last year.

Cause	Number of deaths
Heart Attack	5
Accidents	4
Kryptonosis	10
Others	6

Answer the following:

- a. What is the risk of dying of kryptonosis in Municipality A? In percent
- b. What is the risk of dying of kryptonosis in Municipality A relative to other causes? In percent
- c. What is the risk of dying of kryptonosis in Municipality of A relative to deaths due to other causes? In percent