

Practical Exam for Wastes
for 4th Year Environmental Science Students

Answer all following questions: **Total: 45marks**

Question 1: (12 marks)

- a-Describe compost production
- b-Determine the factors affecting biogas production
- c-Illustrate the outline of the biological conversion in landfills. support your answer with draw.

Question 2: (15 marks)

- a- Calculate the oxygen supply in the aeration tank at biological treatment plant using the following: solid conc. =1485mg, $BOD_i=200 \text{ mg/m}^3$, $BOD_f = 4 \text{ mg/l}$, flow rate = $1180 \text{ m}^3/\text{day}$, $\Theta_c= 24.76 \text{ m}^3/\text{day}$ and tank volume = 2200 m^3
- b-Illustrate the outline of wastewater treatment plant. support your answer with simple flow chart.

Question 3: (18 marks)

A- Calculate the volume of methane, CO_2 , and ammonia that would be produced from anaerobic degradation of 4 tone of an organic solid waste having the chemical formula $\text{C}_{50}\text{H}_{100}\text{O}_{40}\text{N}$ and comment on your result. (Densities of methane = 0.7164 , $\text{CO}_2= 1.2567$ and ammonia = 0.7708 kg/m^3)

B- Estimate oxygen amount required for complete oxidation of one tone of biodegradable solid waste having the chemical formula $\text{C}_{50}\text{H}_{100}\text{O}_{40}\text{N}$. (Densities of oxygen = 1.4289 and ammonia = 0.7708 kg/m^3)

C- How can you assess the biodegradability of potato processing wastewater?

Best Wishes

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