

國立成功大學

114學年度碩士班招生考試試題

編 號：108

系 所：環境工程學系

科 目：環境工程概論

日 期：0210

節 次：第 1 節

注 意：1. 可使用計算機
2. 請於答案卷(卡)作答，於
試題上作答，不予計分。

1. Please explain the following glossaries/abbreviations.

- (1) Aerosol (4%)
- (2) Algal bloom (4%)
- (3) LCA (4%)
- (4) SVI (*hint*: for sewage treatment) (4%)
- (5) LD₅₀ (*hint*: for toxicity) (4%)

2. Water supply engineering

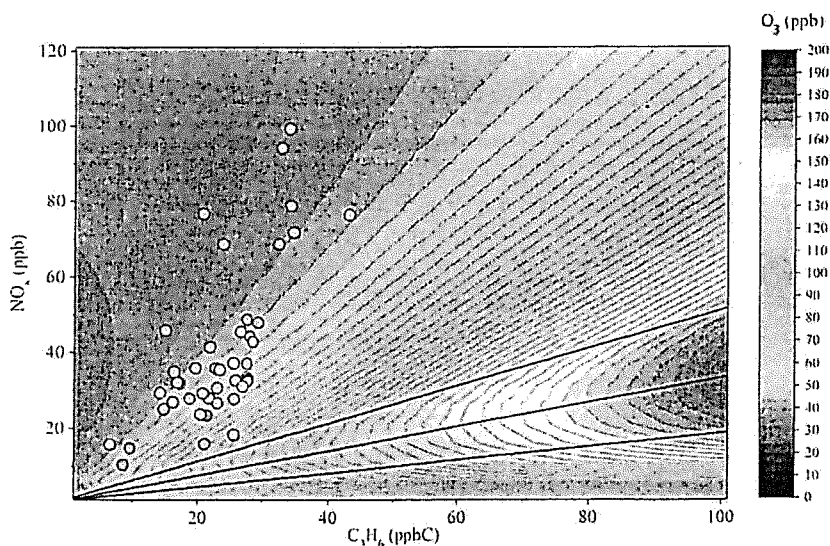
- (1) Climate change is causing more and more extreme weather events, and intense typhoons will continue to affect Taiwan every year. What engineering methods can be used to quickly and scientifically solve the problem of excessive raw water turbidity caused by heavy rainfall? (10%)
- (2) How to evaluate the Please summarize the impact of NOM on the drinking-water treatment processes, including coagulation, membranes, disinfection, and distribution. (10%)

3. Waste water treatment

What are the components of the self-purification process in the river? How can domestic sewage be treated with ecological engineering methods? Explain the purification mechanisms involved. (10%)

4. Air quality and climate change

- (1) According to the following EKMA curve for a target area's ground-level ozone. The dots in the figure represent the local O₃ concentrations. Please give five emission control measures to “efficiently” reduce the near surface O₃ level. (10%)



- (2) Please point out the differences between “Net-zero emission” and “Carbon neutrality”. (10%)

5. Air pollution control

Please give a series of the best available control technology (BACT) for both dioxin and high HCl control from the flue gas of a hazardous waste incineration plant. (10%)

6. Waste management

- (1) What is the difference between HHV and LHV in waste incineration? How to measure them? (10%)
- (2) A MSWI was constructed in 2000 with a capacity of 300 tons/day (HHV = 2400 kcal/kg). The forecasted demand for MSW treatment is 200 tons/day (HHV = 2000 kcal/kg) in 2030. What may you change the operation conditions to avoid certain technical and emission problems? (10%)