

國立成功大學

113學年度碩士班招生考試試題

編 號： 140

系 所： 環境工程學系

科 目： 環境工程概論

日 期： 0201

節 次： 第 1 節

備 註： 可使用計算機

※ 考生請注意：本試題可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. (10%) In a municipal wastewater plant, what is the principal objective of **secondary treatment** and **tertiary treatment**? How are the objectives of these treatments achieved?
2. (10%) What is **Langelier's Index** and what are the factors affecting Langelier's Index?
3. (10%) What are the **Air Quality Index (AQI)** and its classification levels in Taiwan? Please indicate the six air pollutant that AQI considers.
4. (10%) Define **Photochemical smog**. Explain its formation mechanism.
5. (10%) In treating hazardous waste, there are **Solidification** and **Stabilization** methods. Please explain the definition and objective of both methods.
6. (10%) In 2022, Taiwan generated 11 million tons of trash, an amount equal to 1.3 kilograms per person per day. What do you think is the best method of dealing with **municipal solid waste**? Explain the reasons.
7. **Figure 1** shows global costs per unit of energy (USD per MWh) for some rapidly changing mitigation technologies. Solid lines indicate the average unit cost in each year. Light-shaded areas show the range between the 5th and 95th percentiles in each year. (Reference: IPCC AR6 report)
 - (a) (10%) Please write a short paragraph concluding the information you get from the figure.
 - (b) (5%) What do you think is the challenge for Taiwan to adopt renewable energy technology shown in the figure? What do you think is the challenge for Taiwan to adopt passenger electric vehicle?

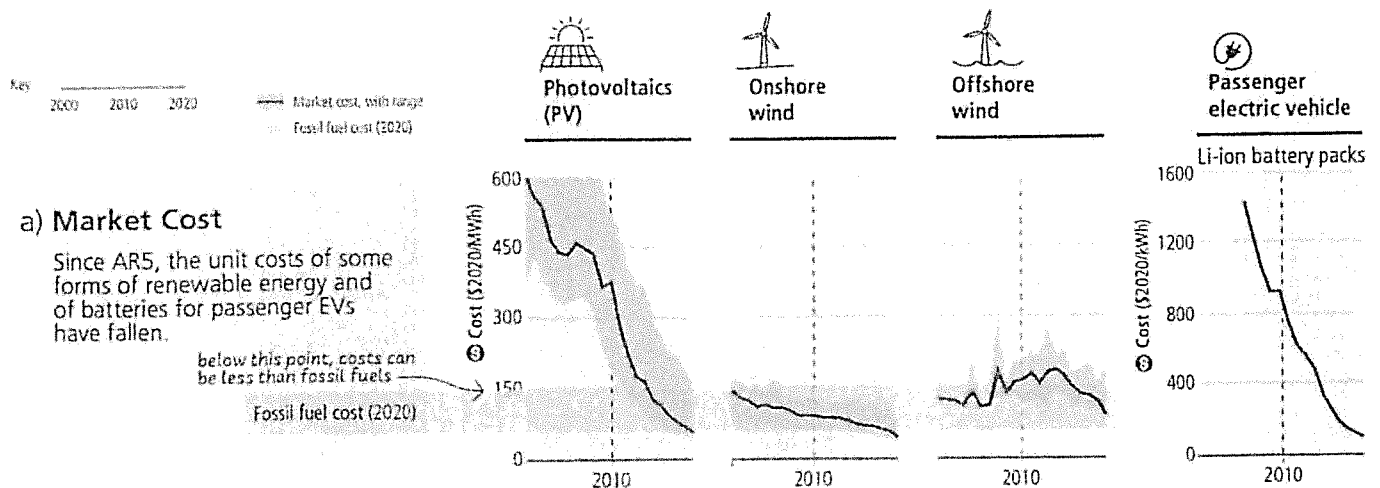


Figure 1: Unit cost reductions and use in some rapidly changing mitigation technologies.

8. (15%) **Figure 2** show the Taiwan 2050 Net Zero Transition Emission Plan announced in 2021. There are five sectors mentioned in this figure, namely Forest, Electricity, Non-Energy, Transportation, and Industrial. Choose three from them and explain what resources or technology is required to achieve the transition in the selected sectors.

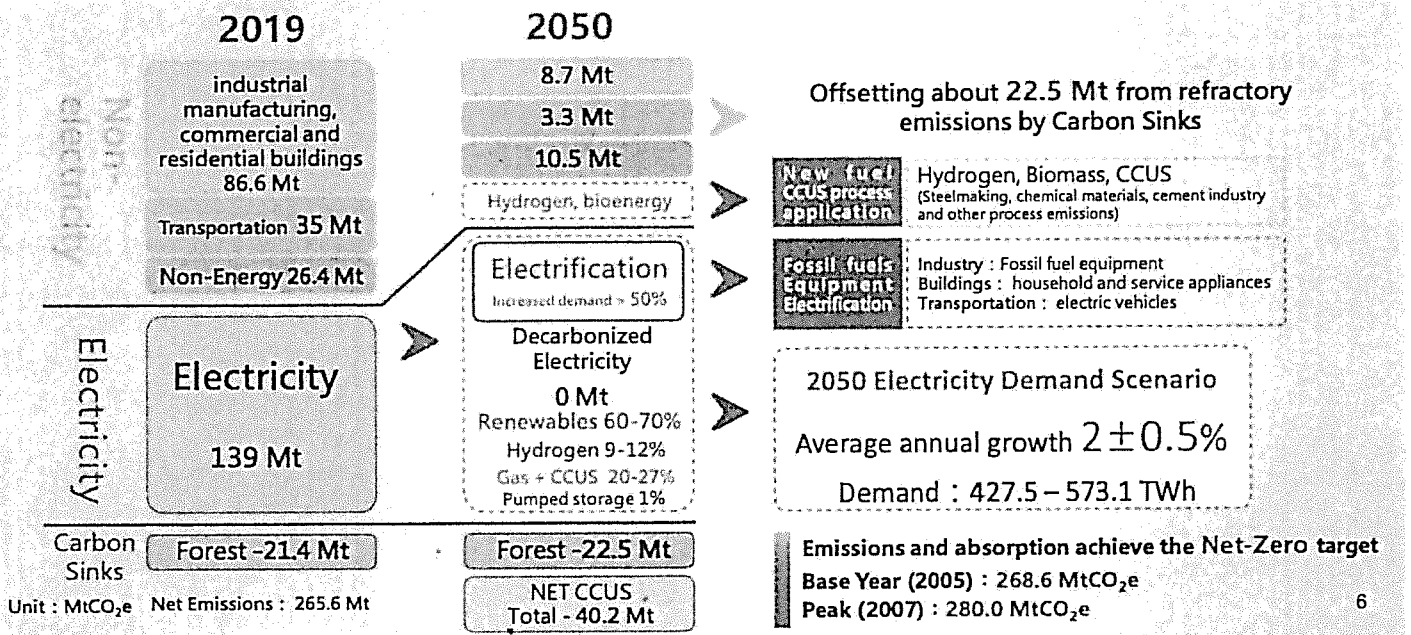


Figure 2: Taiwan 2050 Net Zero Transition Emission Plan

9. (10%) Explain what carbon capture, storage, and utilization (CCSU) is.