

請於答案卷上依序作答，並註明作答的題號

試卷共四大題

1. In economics, the Cobb-Douglas production function is widely used to represent the relationship between the amounts of two or more inputs a firm uses and the amount of output produced by those inputs. The most standard form of the Cobb-Douglas production function for firm i is defined as follows:

$$Q = A \times L^\alpha \times C^\beta$$

where Q = total production of firm i , L = labor input of firm i , C = capital input (e.g., the sum of machinery, equipment, and buildings) of firm i , A = total factor productivity, and α and β are the output elasticities of labor and capital, respectively.

- (a) Assume that firm i implements transaction processing systems to automate or facilitate daily routine transactions of the firm and allows staff and operational managers to monitor the status of business operations. Please describe how transaction processing systems can affect the Cobb-Douglas production function to improve the total production of firm i (i.e., to increase Q). (12%)
- (b) Assume that firm i plans to initiate a big data analytics project. Please describe how a big data analytics technology can additionally affect the Cobb-Douglas production function to further improve the output of firm i . (12%)
2. Investing in information technology (IT) or information systems does not guarantee good returns. Prior research studies have indicated that firms generally receive superior returns from their IT investments if these IT investments are accompanied by investments in complementary assets. In contrast, if firms fail to make these complementary investments, the firms will receive less or no returns on their IT investments. According to the literature, complementary assets can be classified into three types: organizational assets, managerial assets, and social assets.
- (a) Please list and describe three different organizational assets. (9%)
- (b) When a firm pursues an innovation strategy, which type(s) of complementary assets (organizational assets, managerial assets, or social assets) is more important for improving the returns on the firm's IT investments? Please provide detailed explanations to justify your answer. (9%)
- (c) When a firm's IT investment involves an emerging IT and the firm is not familiar with this particular IT, which type(s) of complementary investments (organizational assets, managerial assets, or social assets) is more important for improving the return on this specific IT investment? Please provide detailed explanations to justify your answer. (8%)

見背面

3. 在共享經濟的時代，出現許多雙邊或多邊平臺。平臺定價方面，平臺經常利用「交叉補貼」的概念，策略性地給某一邊優惠，養大一邊之後，跟另一邊收取更多費用。舉例來說，104 人力銀行不跟求職者收費，讓求職者免費使用，擁有許多求職者使用後，藉此增強面對公司的議價能力。

現在 UberEats、Foodpanda 等餐點外送服務，是一種「三邊平臺」，連結餐廳、消費者和外送員，平臺也因此有各種營收管道。舉例來說，平臺可以跟訂餐的消費者收手續費或會員費（例如 UberEats 的優饗方案），也可以跟餐廳針對餐費做抽成或收取月費，將這些營收中的一部分發給外送員做為薪酬。

針對餐點外送平臺，請考慮三方的加入意願與平衡，考慮交叉補貼的可能性。具體來說，外送平臺至少有以下三個選項：（一）給消費者免運費或很低的運費，藉此獲得很多消費者訂餐，進而跟餐廳抽成抽更多；（二）跟餐廳抽成抽很少，藉此獲得各式各樣的餐廳加入，進而跟消費者收取較多費用；（三）其他方案。請選擇你認為能最大化平臺預期利潤的收費模式，並說明你的理由。(25%)

4. 臺灣許多城市都有 YouBike 服務，在許多地點設置公共腳踏車停靠站，讓消費者可以共享腳踏車，在站點租借、騎乘後歸還至站點，通常也允許甲地租乙地還。

在設置停靠站點的時候，顯然必須考慮許多議題，其中「需求」就是最重要的議題之一。理論上，站點應該設置在需求高的地方，但需求的估計並不容易。許多地方看似沒有騎乘腳踏車的需求，但其實可能只是因為該地過往都沒有站點，民眾的使用習慣尚未被養成，站點建造後說不定需求量其實很大。

請考慮各種可能的資訊科技與管理手法，設計一個估計「站點建造完成」之後的需求量的方法。你的方法除了能良好地估計潛在需求，也應該具備成本的合理性、技術的可行性與民眾的可接受性。(25%)