

國立成功大學
110學年度碩士班招生考試試題

編 號：196

系 所：製造資訊與系統研究所

科 目：計算機概論

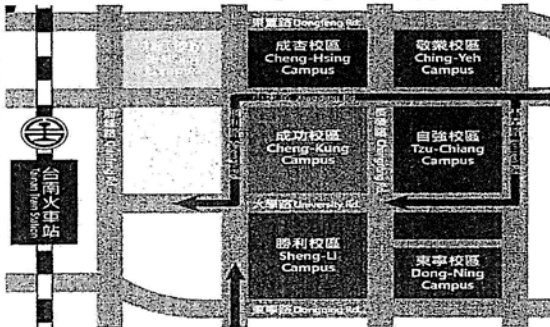
日 期：0202

節 次：第 2 節

備 註：不可使用計算機

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

1. (10%)What is embedded system? Please describe it and give an example.
2. (10%)What is Internet of Things (IOT)? Please describe it and give an example.
3. (5%)What is Artificial Intelligence (AI)?
4. A local area network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building. Assume that there is a local area network of National Cheng Kung University (NCKU).



- 4.1 (10%)Please draw a representative network topology of NCKU local network area. Please use abbreviation to represent the campus, for example, Tzu-Chiang is abbreviated as TC and Li-Hsing is abbreviated as LH and so on. The edge values are the time that a packet is transmitted between two neighbored campuses which are described as followings.

Edge[TC, CY] = 5 ; Edge[TC, DN] = 7; Edge[TC, CK] = 4
 Edge[CY, CH] = 3; Edge[DN, SL] = 8
 Edge[CH, CK] = 6; Edge[CH, LH] = 10
 Edge[LH, KF] = 5; Edge[CK, KF] = 6; Edge[SL, CK] = 8

- 4.2 (15%) Please find the shortest paths of packet transmission from Tzu-Chiang Campus to all the other campus and describe your shortest path algorithm as detailed as possible.

5. Assume that you are going to buy a new computer for doing your research in graduate school.

- 5.1 (10%)Please list the performance metrics (as most as possible) to evaluate a computer.
- 5.2 (10%)Please describe what and why do you care about when you select a computer for your research.

6. Every year, there is an equipment inventory in NCKU. Assume that you are responsible for managing the equipment (such as chair, table, computer, notebook, and so on) of your laboratory and you want to write a program to help you doing this.

- 6.1 (10%)How will you design the equipment management program?

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6.2 (10%) Please write the data structure of your program or draw the necessary tables for the equipment management system.

7. (10%) Again, you are responsible for managing equipment of lab. One day, you find one broken personal computer which cannot turn on. There are other good identical personal computers in the lab. Please provide a solution to fix the broken computer within the minimum cost (money).