國立中山大學 114 學年度
碩士班考試入學招生考試試題

科目名稱：作業系統【資工系資安碩班碩士班】

<div align="center">―作答注意事項―</div>

考試時間：100 分鐘

- **考試開始鈴響前不得翻閱試題，並不得書寫、劃記、作答。**請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。

- **答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，**可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，請衡酌作答。

- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，後果由考生自負。

- 答案卷（卡）應保持清潔完整，不得折疊、破壞或塗改應考證號碼及條碼，亦不得書寫考生姓名、應考證號碼或與答案無關之任何文字或符號。

- 可否使用計算機請依試題資訊內標註為準，如「可以」使用，廠牌、功能不拘，唯不得攜帶書籍、紙張（應考證不得做計算紙書寫）、具有通訊、記憶、傳輸或收發等功能之相關電子產品或其他有礙試場安寧、考試公平之各類器材入場。

- **試題及答案卷（卡）請務必繳回，未繳回者該科成績以零分計算。**

- **試題採雙面列印，考生應注意試題頁數確實作答。**

- **違規者依本校招生考試試場規則及違規處理辦法處理。**

INSTRUCTIONS: If any question is unclear or you believe some assumptions need to be made, state your assumptions clearly at the beginning of your answer.

1. [Operating System: 80%]

(1) Please explain the redundant array of independent disks (RAID) and the RAID levels from 0 to 6, i.e., RAID 0, RAID 1, RAID 2, RAID 3, RAID 4, RAID 5, and RAID 6. Note that descriptions and figures are required to depict all these levels, such as name, basic idea, and how it works. (20%)

(2) Please explain the basic ideas of the following program threats: Trojan horse, trap door, logic bomb, and stack and buffer overflow. (20%)

(3) Please show and explain the difference between nonvirtual machine and virtual machine using figures and descriptions. (10%)

(4) Please show and explain the basic idea of cloud computing and edge computing. (10%)

(5) The cancellation of a target thread may occur in the following two different scenarios: asynchronous cancellation and deferred cancellation. Please explain the main features of these two scenarios, the difficulties they may encounter, and possible OS solutions. (20%)

2. [Security: 20%]

(1) Explain what is Prompt Attack? (3%)

(2) Explain what is Fake News? (3%)

(3) Explain what is Secure Computation? (3%)

(4) Explain what is Personal Identifiable Information (PII)? (3%)

(5) Please describe what is Post Quantum Cryptography? (3%)

(6) Please explain what the concept of Data Science for Malware Detection is and how to achieve it. (5%)