

國立臺北科技大學 114 學年度碩士班招生考試

系所組別：4202 經營管理系碩士班

第二節 計算機概論 試題 (選考)

第 1 頁 共 2 頁

注意事項：

1. 本試題分成兩部份。第一部份有 9 題，占 72 分；第二部份有 4 題，占 28 分。全卷共 100 分。
2. 不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

Section 1. Multiple Choice Questions.

Select the one best option for each question

(8 points per question across 9 questions, for a total of 72 points)

1. Convert 11001 (base 2) to base 10.

- (A) 22
- (B) 25
- (C) 30
- (D) 18

2. Which of these connections is the fastest?

- (A) Latency: 5 ms
- (B) Latency: 50 ms
- (C) Latency: 500 ms
- (D) Latency: 5000 ms

3. The resolution of a display is 256ppi. What does this mean?

- (A) 256 pixels per inch
- (B) 256 picture per image
- (C) 256 pixels per image
- (D) 256 pictures per inch

4. Which of these is a high-level programming language?

- (A) Assembly
- (B) Python
- (C) Fortran
- (D) C++

5. Where is SQL most likely to be used?

- (A) Creating graphic designs for websites
- (B) Managing and querying databases
- (C) Writing scripts for web page interactivity
- (D) Developing mobile applications

6. Which these memory types are typically the fastest?

- (A) DVD reader
- (B) USB stick
- (C) HDD
- (D) SSD

7. Which of these is the largest unit of data?

- (A) 100 MB
- (B) 100 GB
- (C) 100 KB
- (D) 100 bytes

8. Which of these offer the highest data throughput?

- (A) 100Mbps ethernet
- (B) 5G cellular service
- (C) ADSL service
- (D) LTE cellular service

9. Assume all algorithms can complete the same task, which of these would be more ideal for a scalable service?

- (A) $O(\log n)$
- (B) $O(n \log n)$
- (C) $O(n^2)$
- (D) $O(1)$

注意：背面尚有試題

Section 2.

This is a code in R language, but the code should be understandable if you have knowledge of general programming or scripting languages.

(7 points per question across 4 questions, for a total of 28 points)

```
# Example dataset: A data frame with type and amount
data <- data.frame(
  Type = c("revenue", "cost", "revenue", "revenue", "cost"),
  Amount = c(500, 200, 300, 400, 100)
)

a <- 0

for (i in 1:nrow(data)) {
  # Check if the type is "revenue"
  if (data$Type[i] == "revenue") {
    a <- a + data$Amount[i]
  }
}

# Print the result
print(a)
```

10. Explain what does this code do. (1-2 sentences in Chinese or English)

11. What is the output result?

12. What is the output if the input data is changed to this?

```
data <- data.frame(
  Type = c("revenue", "cost", "tip", "revenue", "tip"),
  Sales = c(500, 200, 20, 400, 10)
)
```

13. Rewrite the code so that the output is the total profit, which is revenue + cost – tip.