招 生 學 年 度	102	招 生 類 別	碩士班
系 所 班 別	資訊工程學系 網路與多媒體科技碩士班		
科　　　　目	計算機概論（含程式設計）		
注 意 事 項	本考科禁止使用掌上型計算機		

1. **(12%)** What is Round Trip Time? Why we need it? How can TCP estimate it?

2. **(18%)** What are the full name and major function of the following network protocols?

    (a)　HTTP

    (b)　DNS

    (c)　SMTP

    (d)　FTP

    (e)　POP3

    (f)　IMAP

3. **(10%)** Suppose that all links are 1.536 Mbps, and each link uses TDM with 12 slots. The time of end-to-end circuit established is 500msec. How long does it take to send a file of 640,000 bits from host A to host B over a circuit-switched network?

4. **(10%)** How do packet loss and packet delay occur?

5. **(10%)** Write a program to use a **non-recursive** `binarySearch` function to perform the binary search on an array. The function should receive an integer array and the size of the array as arguments. If the search key is found, return the array subscript; otherwise, return -1. You may use any programming language.

6. **(10%)** Modify the program for Problem 8 to use a **recursive** `binarySearch` function to perform the binary search on the array. You may use any programming language.

7. **(5%)** Given the following list of cylinder requests in order in which they were received, list the order in which these requests would be handled if the first-come, first-served algorithm were used. Assume that the disk is positioned at cylinder 12.

    38, 10, 21, 4, 5, 31, 90

8. **(5%)** Given the following list of cylinder requests in order in which they were received, list the order in which these requests would be handled if the shortest-seek-time-first algorithm were used. Assume that the disk is positioned at cylinder 12.

    38, 10, 21, 4, 5, 31, 90

9. **(5%)** Describe the three primary components of a database management system.

10. **(15%)** Explain (a) expert system (b) inference engine (c) artificial neural network.