慈 濟 大 學 1 0 0 學 年 度
碩 士 班 暨 在 職 專 班 招 生 考 試 命 題 紙

科目：計算機概論 共1頁

(1) (30%) For each of the following pairs of terms, contrast the terms in the pair:

(A) ASCII Code vs. Unicode

(B) Combinational circuit vs. Sequential circuit

(C) Pipelining vs. Shared-memory parallel processing

(D) Assembler vs. Compiler

(E) Modular programming vs. Object-oriented programming

(F) Binary search tree vs. Binary search

(G) Memory management vs. Process management

(H) Sequential access files vs. Direct access files

(I) Information encryption vs. Information decryption

(J) Circuit switching vs. Packet switching

(2) (10%) Please describe the output of the following program segment in C:

```
void main ()
{ int K1, K2;
  K1='B'; K2=myTestFunction(&K1); K1+=K2; K2+=14;
  printf("%c %x\n",K1,K2);
}
int myTestFunction (int *myK)
{ return (*myK-'A');}
```

(3) (15%) Multiprogramming is an essential task of operating systems. Discuss and explain the common strategies for multiprogramming, including both the advantages and disadvantages of each strategy.

(4) (20%) Write a *recursive* function REX that receives an expression EXP in string form and uses a *stack* to determine whether EXP has compatible parentheses (including '(', ')', '[', and ']'). For example, a call REX("((1+2)*(3+1))") returns true, while both the calls REX("((1+2))*(3+1") and REX("((1+2)*[3+1))") return false.

(5) (10%) Describe the relationships among SMTP, IP, TCP, FTP, and Telnet in data communication.

(6) (15%) Suppose we have a target string t and a very long string D (e.g., 10 Giga bytes) consisting of a certain set of symbols. Design an efficient algorithm to find *all* occurrences of t in D, and analyze the time complexity of your algorithm.