國立中央大學八十四學年度碩士班研究生入學試題卷

所別：資訊工程研究所 組 科目：系統程式 共 2 頁 第 1 頁

Q1: Consider an assembler and linking loader as described in the text. Identify the passes of the assembler or the loader where each of the following would be done.

(a) Assign relative addresses to symbols defined as labels in the program.
(b) Load the object program into memory
(c) Assign actual addresses to program modules.
(d) Generate the object program.
(e) Detect doubly-defined entry points.
(f) Modify the relocatable portion of the object code.
(g) Enter addresses for external symbols into the external symbol table.
(h) Process EQU assembler directives.
(i) Generate values defined in data initialization statements such as WORD and BYTE.

(18%)

Q2: Consider the following fragment of SIC/XE assembler language:

```
CC          START       0
            EXTDEF      EE
            EXTREF      HH
AA          WORD        35
BB          EQU         AA+23-CC
DD          EQU         70
EE          EQU         DD+AA-CC
FF          EQU         (AA-CC)*2
GG          WORD        DD-CC+AA-BB
```

(a) Is AA relative, absolute, or neither?
(b) Is BB relative, absolute, or neither?
(c) Is CC relative, absolute, or neither?
(d) Is DD relative, absolute, or neither?
(e) Is EE relative, absolute, or neither?
(f) Is FF relative, absolute, or neither?
(g) Is GG relative, absolute, or neither?
(h) Is HH relative, absolute, or neither?

(16%)

Q3: Below is the macro RDBUFF stored in DEFTAB.

```
RDBUFF      &INDEV,&BUFADR,&RECLTH
CLEAR       X
CLEAR       A
CLEAR       S
+LDT        #4096
TD          =X'?1'
JEQ         *-3
RD          =X'?1'
COMPR       A,S
JEQ         *+11
STCH        ?2,X
TIXR        T
JLT         *-19
STX         ?3
MEND
```

(a) Why uses ?1, ?2, ?3 to specify the first, second, third parameters? (5%)

(b) 1. Why uses * + 11, * - 19 to perform instruction jump? (5%)
2. What are the disadvantages if we use * ± *n* to perform instruction jump? (6%)
3. How to avoid the above shortcomings by using label? (10%)

Q4: Bellows are a set of real compilers, list the main features of these compilers.

(a) ETH Zurich Pascal compiler
(b) UCSD Pascal compiler
(c) The YACC
(d) IBM FORTRAN H compiler

(20%)

Q5: Illustrate the memory allocations for the jobs listing below using relocatable partitions. Assume job 2 terminates first, and then job 1, following by job 3. The total amount of memory available on the computer is assumed to be 50000 bytes; the operating system occupies the first 10000 bytes. Note that these sizes, and all other sizes and addresses used in this section, are given in hexadecimal. The memory that is not occupied by the operating system is divided into four partitions. Partition 1 begins at address 10000, immediately following the operating system, and is 18000 bytes in length. The other partitions follow in sequence: Partitions 2 and 3 are each 10000 bytes in length, and Partition 4 is 8000 bytes in length.

Job	Length (hexadecimal)
1	A000
2	14000
3	A800
4	4000
5	E000
6	B000
7	C000
8	D000

(20%)