(10%) 1. (a) What is the difference between a literal and an immediate operand?

(b) Explain in detail how the assembler handles the literals in a program.

(10%) 2. (a) An object program (.OBJ file) generated by the assembler is a machine language file, but it cannot be executed. Explain the reasons.

(b) What specific functions does a linker program perform?

(10%) 3. (a) Distinguish between the lexical analysis and the syntatic analysis for a compiler.

(b) What is a grammar for a programming language?

(c) Give two notations used for writing grammars.

(12%) 4. Distinguish between

(a) multiprogramming system and multiprocessor system

(b) batch processing system and time-sharing system

(c) location counter and program counter

(10%) 5. (a) What is a process?

(b) Draw a diagram to explain the process state transitions during the period of its existence.

(8%) 6. (a) What are the differences between a macro and a subroutine?

(b) How should a programmer decide whether to use a macro or a subroutine to accomplish a given logical function?

(12%) 7. The two major internal data structures used by an assembler are Operation Code Table (OPTAB) and Symbol Table (SYMTAB).

(a) What information does OPTAB contain? List at least 4 fields.

(b) How is OPTAB used during Pass 1 and Pass 2 of an assembler, respectively?

(c) What information does SYMTAB contain? List at least 5 fields.

(d) How is SYMTAB used during Pass 1 and Pass 2 of an assembler, respectively?

(8%) 8. (a) What are the four classes of interrupts on a traditional computer?

(b) What are the advantages of having several different classes of interrupts, instead of just one class with flag bits to indicate the interrupt type?

〈接前頁〉

(12%) 9. Define the following terms

      (a) compiler-compiler

      (b) macro processor

      (c) linkage editor

      (d) disassembler

(8%) 10. (a) What is "program relocation"?

       (b) Explain in detail how it is accomplished and how it is related to the addressing modes.

〈接前頁〉