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10CS52

Fifth Semester B.E. Degree Examination, June/July 2017
System Software

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Calculate the target address and value loaded into register A for the following machine instructions. (10 Marks)

- i) 0310C303
- ii) 03C300
- iii) 022030
- iv) 010030
- v) 032600.

if (B) = 6000, (PC) = 3000, (X) = 90,

| Memory location | Contents |
|-----------------|----------|
| 3030 | 3600 |
| 3600 | 103000 |
| 6390 | C303 |
| C303 | 3030 |

- b. Differentiate between system software and application software. (05 Marks)
- c. Explain the registers and addressing modes of SIC machine architecture. (05 Marks)
- 2 a. Generate the complete object program for the following assembly level program.
- | | | |
|-------|-------|----------|
| SUM | START | 4000 |
| FIRST | LDX | ZERO |
| | LDA | ZERO |
| LOOP | ADD | TABLE, X |
| | TIX | COUNT |
| | JLT | LOOP |
| | STA | TOTAL |
| | RSUB | |
| TABLE | RESW | 2000 |
| COUNT | RESW | 1 |
| ZERO | WORD | 0 |
| TOTAL | RESW | 1 |
| | END | FIRST |

Assume : LDX = 04, LDA = 00, ADD = 18, TIX = 2C, JLT = 38, STA = 0C RSUB = 4C
(10 Marks)

- b. Explain the program relocation with an example. (10 Marks)
- 3 a. Explain the structure of load and go assembler. (10 Marks)
- b. Differentiate between literal and an immediate operand. Give an example for each. (05 Marks)
- c. With an example, explain the multipass assembler. (05 Marks)

- 4 a. What is dynamic loading? Explain the process of loading and calling of subroutines using dynamic binding. (10 Marks)
- b. What is relocating loader? Explain the creation of object program with relocation by bit mask. (10 Marks)

PART – B

- 5 a. Explain briefly structure of a typical editor with the help of suitable block diagram. (10 Marks)
- b. Explain different debugging functions and capabilities. (10 Marks)
- 6 a. List machine independent macro processor features. Explain any two with an example. (10 Marks)
- b. Explain the data structures involved in macro-processor algorithm. (05 Marks)
- c. Explain the features of MASM macro-processor. (05 Marks)
- 7 a. Explain the structure of a lex program with an example. (08 Marks)
- b. Explain yylex () and yywrap () functions. (04 Marks)
- c. Write a Lex program to count the number of characters, words, spaces and lines in a given input file. (08 Marks)
- 8 a. Write a yacc program to accept the grammar $a^n b^n$ where $n \geq 0$. (10 Marks)
- b. Write a short note on Parser – Lexer communication. (05 Marks)
- c. Explain the following functions : (05 Marks)
- i) yyparse
 - ii) yytext
 - iii) atoi
 - iv) yylval
 - v) yyerror.

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