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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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



- 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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