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06CS52

**Fifth Semester B.E. Degree Examination, June/July 2013**  
**Systems Software**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Generate the target address for the following machine instructions:  
 i) 032600h ii) 03C300h iii) 010030h  
 if (B) = 006000, (PC) = 003000, (X) = 000090. (06 Marks)  
 b. Explain the instruction formats and addressing modes of SIC/XE machine architecture. (10 Marks)  
 c. Write a sequence of instructions in SIC/XE to write a 100-byte record from BUFFER into output device 'F5'. (04 Marks)

- 2 a. Write and explain the algorithm of pass 1 of 2 pass assembler. (10 Marks)  
 b. Generate the object code and the symbol table for the following assembly level program

```

RDREC  START 1036
        CLEAR X
        CLEAR A
        CLEAR S
        + LDT # 4096
RLOOP  TD INPUT
        JEQ RLOOP
        RD INPUT
        CMPR A, S
        JEQ EXIT
        STCH BUFFER, X
        TIXR T
        JLT RLOOP
EXIT   STX LENGTH
        RSUB
INPUT  BYTE X'F1'
BUFFER RESB 400
LENGTH RESB 2
        END RDREC
  
```

Assume:

CLEAR = B4, LOT = 74, TD = E0, JEQ = 30, STCH = 54, TIXR = B8, JLT = 38,  
 STX = 10, RD = D8, RSUB = 4C, X = 1, T = 5. (10 Marks)

- 3 a. Differentiate between literal and immediate operands. How does the assembler handle the literal operand? (05 Marks)  
 b. Differentiate between program blocks and control sections. With an example explain how control sections are processed. (08 Marks)  
 c. With an example explain how forward references are handled by one pass assembler. (07 Marks)

- 4 a. What do you mean by relocating loaders? Explain the two ways of doing relocation. (10 Marks)  
b. Briefly explain the data structures used in linking loaders. (04 Marks)  
c. What do you mean by dynamic linking? With a diagram explain dynamic linking. (06 Marks)

**PART – B**

- 5 a. With a neat diagram, explain the structure of a text editor. (10 Marks)  
b. Explain the features of interactive debugging system. (10 Marks)
- 6 a. What are the basic functions of macro processor? Explain the various data structures used in the implementation of a one-pass macro processor. (10 Marks)  
b. Explain generation of unique labels in macro processors. (05 Marks)  
c. List the advantages and disadvantages of a general purpose macro processor. (05 Marks)
- 7 a. With an example explain the structure of a lex program. (06 Marks)  
b. What is a regular expression? Explain any 8 characters that form a regular expression. (10 Marks)  
c. Write a lex program to count the number of words in a text file. (04 Marks)
- 8 a. Explain shift reduce parsing with an example. (06 Marks)  
b. Write a YACC program to evaluate the arithmetic expressions. (06 Marks)  
c. Define YACC tools. What are two types of conflicts in YACC? Give examples. (08 Marks)

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