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12 Paper

**Fifth Semester B.E. Degree Examination, December 2010**  
**System Software**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Give the target address generated for the following machine instruction:  
 i) 032600h                      ii) 03C300h                      iii) 0310C303h  
 if (B) = 006000, (Pc) = 003000, (X) = 000090. (06 Marks)  
 b. With respect to Pentium pro architecture, explain the following : (10 Marks)  
 i) Instruction format      ii) Registers      iii) Data format      iv) Addressing mode.  
 c. Write sequence of instruction for SIC to clear 20 byte string to all blanks. (04 Marks)
- 2 a. Define assembler directive. Explain the different types of directives used in SIC m/c. (08 Marks)  
 b. What is the need of pass 2 assembler? Reason out with a simple example. (04 Marks)  
 c. Give an algorithm for pass 1 of 2 pass assembler. (08 Marks)
- 3 a. Differentiate between literal and an immediate operand. Give an example for each. (05 Marks)  
 b. Define control section. How does control section differ from the program blocks? Explain with an example. (10 Marks)  
 c. With an example, explain the multipass assembler. (05 Marks)
- 4 a. What do you mean by relocating loaders? Explain the method for relocation as a part of object program. (10 Marks)  
 b. Explain, with a figure, dynamic linking. Discuss its advantage. (10 Marks)

**PART – B**

- 5 a. List the task performed by document linking process in an interactive system. (04 Marks)  
 b. Give the relationship between editing and viewing process. (06 Marks)  
 c. Explain the features of interactive debugging system. (10 Marks)
- 6 a. List m/c independent macro processor features. Explain any two with an example. (10 Marks)  
 b. With an illustrative example, explain the macro processing features of MASM macro process. (10 Marks)
- 7 a. Explain the structure of Lex program, with an example. (06 Marks)  
 b. Give regular expression for the following :  
 i) 'C' – variables                      ii) Integer data                      iii) Floating point data (06 Marks)  
 c. Write Lex program to count the number of words in a text file. (08 Marks)
- 8 a. Explain shift reduce parsing, with an example. (06 Marks)  
 b. Write yacc program to recognize the given arithmetic expression containing +, -, /, × operator with + and - having highest precedence. (08 Marks)  
 c. What do you mean by ambiguous grammar? How it can be overcome? Illustrate with an example. (06 Marks)

**Fifth Semester B.E. Degree Examination, Dec.09/Jan.10**  
**System Software**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, choosing at least two from each part.**

**PART-A**

- 1
  - a. What is system software? Differentiate it from application software. (06 Marks)
  - b. Explain the instruction formats and addressing modes of SIC/XE machine architecture. (10 Marks)
  - c. Explain with an example, a simple input and output on SIC/XE machine architecture. (04 Marks)
  
- 2
  - a. What are the fundamental functions of any assembler? With an example, explain any six assembler directives. (10 Marks)
  - b. Explain the data structures used in assembler algorithms. (06 Marks)
  - c. What is program relocation? Explain the problems associated with it and their solutions. (04 Marks)
  
- 3
  - a. What are literals? Differentiate literals from immediate operands. (04 Marks)
  - b. Explain the structure of load-and-go assembler. (06 Marks)
  - c. Explain how multipass assembler handles the following forward reference.
 

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1 HALFSZ EQU MAXLEN/2
2 MAXLEN EQU BUFEND-BUFFER
3 PREVBT EQU BUFFER - 1
4 BUFFER RESB 4096
5 BUFFEND EQU *
```

Assume that, when assembler goes to line 4, location counter contains 1.34(hex). (10 Marks)
  
- 4
  - a. Briefly explain the boot strap loader, with the algorithm. (10 Marks)
  - b. With a diagram, explain how object program can be processed using linkage editor. (10 Marks)

**PART-B**

- 5
  - a. What is an interactive editor? Explain the typical editor structure. (10 Marks)
  - b. Explain the different debugging functions and capabilities. (10 Marks)
  
- 6
  - a. Explain the data structures involved in macroprocessor algorithms. (06 Marks)
  - b. Explain the advantages and disadvantages of general purpose macroprocessors. (08 Marks)
  - c. Explain the features of MASM macroprocessor. (06 Marks)
  
- 7
  - a. Explain three basic sections of a LEX program. (08 Marks)
  - b. What is regular expression? Briefly explain all the characters that form regular expression. (12 Marks)
  
- 8
  - a. What is shift/reduce parsing? Explain the parsing of the input "fred = 12 + 13" and represent it using parse tree. (10 Marks)
  - b. Explain the ambiguity while parsing  $2 + 3 \times 4$ . Explain the solution for it. (10 Marks)