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**Fifth Semester B.E. Degree Examination, Dec. 07 / Jan. 08**  
**System Software**

Time: 3 hrs.

Max. Marks:100

**Note : Answer any FIVE full questions.**

- 1
  - a. With examples, show the target address calculation with different addressing modes of SIC/XE machine. (10 Marks)
  - b. Discuss about memory, addressing modes, registers and data formats of CRAY-T3E machine. (10 Marks)
  
- 2
  - a. List various data structures used in the assembling process. With an algorithm explain the usage of these data structures in pass-two of a two-pass assembler. (10 Marks)
  - b. Show the structure of a head record, text record and modification record taking one example for each. (06 Marks)
  - c. What is LTORG? When is it used? Explain with an example. (04 Marks)
  
- 3
  - a. What is a program block? How multiple program blocks are handled by assemblers? (10 Marks)
  - b. Compare a two-pass assembler with a single pass assembler. How forward references are handled in one-pass assembler? (10 Marks)
  
- 4
  - a. What are the basic functions of a loader? Develop an algorithm for a bootstrap loader. (08 Marks)
  - b. How relocation is done using bit masking and modification records? Explain. (04 Marks)
  - c. Explain the procedure of program linking when the subprograms use external references. (08 Marks)
  
- 5
  - a. What is a macro? Develop a program for processing macro definitions and macro calls. (12 Marks)
  - b. With examples explain how unique labels are generated during macro expansions. (08 Marks)
  
- 6
  - a. What are the main functions of a compiler? List all phases of a compiler. (04 Marks)
  - b. Develop an algorithm for parsing arithmetic expressions using recursive descent parser. (10 Marks)
  - c. Write a note on intermediate code generation. (06 Marks)
  
- 7
  - a. Explain the structure of Lex and YACC programs. Show the procedure to get a parser using Lex and YACC Tools. (08 Marks)
  - b. Explain how grammar conflicts are handled by YACC? Write a YACC program for a desktop calculator. (12 Marks)
  
- 8 Write short notes on:
  - a. Editors
  - b. CISC machines
  - c. Conditional macro expansion
  - d. Automatic library search. (20 Marks)