# 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.

```
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 n 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 passing 2 + 3 × 4. Explain the solution for it. **(10 Marks)**

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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.