



**P.E.S. College of Engineering, Mandya - 571 401**  
*(An Autonomous Institution affiliated to VTU, Belgaum)*  
**Fifth Semester, B.E. - Computer Science and Engineering**  
**Semester End Examination; Dec. - 2015**  
**System Software**

Time: 3 hrs

Max. Marks: 100

*Note: Answer FIVE full questions selecting ONE full question from each unit.*

**UNIT - I**

- 1 a. What is system software? Differentiate it from application software. 6
- b. Explain; i) Memory ii) Registers iii) Data formats iv) Instruction formats  
v) Addressing modes of SIC/XE Architecture. 14
- 2 a. Write an SIC/XE assembly level, program to add the contents of two array elements. Assume that both arrays are having same length. 10
- b. Differentiate between RISC and CISC machines. 6
- c. Give one example for RISC and CISC machine Architecture and mention the characteristics. 4

**UNIT - II**

- 3 a. What are the fundamental functions of any assembler? With an example explain any six assembler directives. 10
- b. Explain the different data structures used in assembler algorithms. Mention their importance. 10
- 4 a. Write the algorithm for Pass 2 of an assembler. 10
- b. Explain the structure of define record, refer record and modification record. 6
- c. Discuss the two main types of one pass assembler used in assembler design options. 4

**UNIT - III**

- 5 a. Briefly explain the boot strap loader with the algorithm. 10
- b. With a neat diagram explain how object program can be processed using linkage editor. 10
- 6 a. Write the algorithm for pass 1 and pass 2 of a linking loader. 12
- b. With a neat diagram explain the concept of dynamic linking. 8

**UNIT - IV**

- 7 a. Explain the data structures involved in macro processor algorithms. 9
- b. Explain the advantages and disadvantages of general purpose macro processor. 5
- c. Explain the features of MASM macro processor. 6
- 8 a. Explain machine independent macro processor features. 12
- b. Explain the structure of the compiler that processes ANSI C programming language. 8

**UNIT - V**

- 9 a. Explain three basic sections of a LEX program. 8
- b. What is regular expression? Briefly explain all the characters that form regular expression. 12
- 10a. Write a YACC program to test validity of a simplex expression with +, -, /, and \*. 10
- b. Give the specification of a YACC program. 4
- c. Explain shift / reduce and reduce / reduce parsing with an example. 6

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