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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? Compare CISC and RISC machine architecture. 6

b. Discuss: i) Registers ii) Instruction formats iii) Instruction set with reference to SIC/XE architecture. 10

c. Write a SIC instructions to swap the values of ALPHA and BETA. 4

2 a. Explain in detail SIC machine architecture. 10

b. Write SIC/XE assembly level program to exchange contents of two arrays elements. Assume that both arrays are having same length. 10

UNIT - II

3 a. Explain any three machine independent feature of 2 pass SIC assembler with example. 10

b. Write and explain the algorithm of pass – 1 assembler. 10

4 a. Write the format for header record, list record, End record, define record, refer record. 10

b. Explain the following with respect to assembler design :
i) Expressions ii) Symbol defining statements. 10

UNIT - III

5 a. Explain with an example, how the relocation is done using?
i) Bit mask ii) Modification record. 10

b. Explain how object program can be processed using linking loader and linkage editors. 10

6 a. Discuss boot strap loader with algorithm. 10

b. Explain automatic library search with respect to loaders. 6

c. Write an algorithm for absolute loaders. 4

UNIT - IV

7 a. What are the basic functions of macro processor? Explain the various data structures used in the implementation of one pass macro processor. 10

b. Discuss the following with an example each :
i) Macro definition ii) Macro invocation iii) Macro expansion. 10

Contd…2

8 a. Explain the following with example : 10

i) Generation of unique labels ii) Concatenation of macro parameter.

b. Differentiate between macro and macro sub functions. 5

c. Write a short note on ANSIC macro processing language. 5

UNIT - V

9 a. What are LEX and YACC tools? Explain. 10

b. With a YACC program to recognize the grammar $\{a^n b^n$ where $n > 0\}$. 10

10a. Explain shift/reduce parsing with example. 10

b. With a LEX program to count number of spaces, words, lines in a given input string. 10

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