



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 - 2016/Jan - 2017

System Software

Time: 3 hrs

Max. Marks: 100

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

UNIT - I

- 1a. With reference to SIC/XE machine architecture explain :
- | | | | |
|-----------------------|------------------------|--|----|
| i) Registers | ii) Instruction format | | 10 |
| iii) Addressing modes | iv) Memory. | | |
- b. Write SIC/XE instructions to clear 20 byte string to all blanks. 4
- c. Define system software. Differentiate it from application software. 6
- 2 a. Write target address generated for the following machine instruction:
- | | | | | |
|------------|-------------|-----------------|--|---|
| i) 032600h | ii) 03C300h | iii) 0310C303h, | | 6 |
|------------|-------------|-----------------|--|---|
- if (B) = 006000, (Pc) = 003000, (X) = 000090.
- b. Write SIC/XE instruction sequence to copy a 10 byte character string to another string. 4
- c. Explain the following with reference to Pentium pro architecture,
- | | | | | |
|---------------------|----------------------|-------------------------|--|----|
| i) Registers | ii) Data format | iii) Instruction format | | 10 |
| iv) Addressing mode | v) Input and output. | | | |

UNIT - II

- 3 a. Explain any Five assembler directives. 5
- b. Write the format for Header, Text and End record. 5
- c. Write algorithm for Pass-1 of a two pass assembler. 10
- 4 a. Explain the following with respect to assembler design;
- | | | | |
|----------------|---------------------------------|--|----|
| i) Expressions | ii) Symbol defining statements. | | 10 |
|----------------|---------------------------------|--|----|
- b. Explain program blocks and control section with examples. 10

UNIT - III

- 5 a. Explain with an example, how 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. Explain any four loader option commands. 4

UNIT - IV

- 7 a. With suitable example, explain Macro definition, Macro expansion and Macro invocation. 10
b. Explain the data structures used in the implementation of one pass macro processor. 10
- 8 a. Explain the following with examples :
i) Conditional macro expansion 10
ii) Concatenation of Macro parameters.
- b. Explain recursive macro expansion with example. 5
c. Write short note on MASM macro processor. 5

UNIT - V

- 9 a. Explain structure of LEX program with an example. 6
b. List all the characters that form regular expression and explain any four characters with an example for each. 6
c. Write LEX program to count the number of blank spaces, words, lines and character in a file. 8
- 10 a. Explain the following with an example for each,
i) yytext() ii) yywrap() 8
iii) yyin() iv) yylex().
- b. Explain shift reduce parsing. 4
c. Write YACC program to recognize the grammer $\{a^n b^n \text{ where } n > 0\}$. 8

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