



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Information 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

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|---|---|----|
| 1 | a. Explain SIC machine architecture in detail. | 10 |
| | b. Bring out any four differences between RISC and CISC machine architectures. | 4 |
| | c. Generate the target address for the following object codes: | |
| | i) 032600 ii) 010030. | 6 |
| | Content of x = 000090, Content of B = 006000, Content of PC = 003000. | |
| 2 | a. Explain registers, Instruction formats and addressing modes supported in SIC/XE. | 12 |
| | b. Write sample data movement operations for SIC and SIC/XE. | 8 |

UNIT - II

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|---|--|----|
| 3 | a. List and explain any four assembler directives. | 5 |
| | b. Give the format for the following records necessary to obtain object code, | |
| | i) Header – Record ii) Text – record iii) End - record | 5 |
| | c. Explain the concept of program relocation in assembler with the help of a neat diagram. | 10 |
| 4 | a. Describe the following machine independent features of assembler : | |
| | i) Literals | 10 |
| | ii) Program blocks. | |
| | b. Write Pass 1 algorithm of Pass 2 algorithm. | 10 |

UNIT - III

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|---|--|----|
| 5 | a. Discuss the design of an absolute loader and a simple bootstrap loader. | 12 |
| | b. List the various loader options that modify the standard process. | 4 |
| | c. What are the functions performed by the loader. | 4 |
| 6 | a. With the help of a neat diagram, explain the concept of dynamic linking. | 10 |
| | b. With a neat diagram, explain how object program can be processed using linking loader and linkage editor in detail. | 10 |

UNIT - IV

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| 7 | a. Explain basic macro processor functions in brief. | 14 |
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- b. Define macro. What are assembler directives used in macro definition? Explain with an example. 6
- 8 a. Discuss major design options for a macro processor. 14
- b. Explain conditional macro expansion with an example. 6

UNIT - V

- 9 a. Write a LEX program to count the number of vowels in a given text. 5
- b. What is regular expression? Explain meta characters that form a regular expression (any 8) with an example. 10
- c. Write LEX program to find given sentence is 'simple' or 'Compound' 5
- 10a. Write a YACC program to validate a simple arithmetic expression involving operators +, -, *, /. 10
- b. Explain the different sections used in YACC specification. 10

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