USN | | | | | | | | | | |

06CS52

Fifth Semester B.E. Degree Examination, December 2011
Systems Software

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is system software? Compare system software with application software and give couple of examples. **(04 Marks)**

b. Explain the instruction formats and addressing modes of SIC/XE machine architecture. **(10 Marks)**

c. Suppose the ALPHA is an array of 100 words. Write a sequence of instructions for SIC/XE to set all 100 elements of the array to ZERO. Use immediate addressing and register to register addressing to make the process as efficient as possible. **(06 Marks)**

2 a. What are the fundamental functions that any assembler must perform? With a suitable example, explain any six assembler directives. **(10 Marks)**

b. Write an algorithm for PASS-1 of two pass assembler and explain with an example. **(10 Marks)**

3 a. What is literal? What are differences between literal and immediate operand. **(04 Marks)**

b. What are program blocks? With a suitable example, explain how program blocks are handled by an assembler. **(06 Marks)**

c. Give the format of the following records necessary to obtain object code :
i) Define record ii) Refer record iii) Modification record (revised) **(10 Marks)**

4 a. What is loader? What are the basic functions the loader has to perform? **(04 Marks)**

b. What is relocation? Explain the methods for specifying relocation as a part of object program. **(08 Marks)**

c. Explain the working of linkage editor and linking loader. **(08 Marks)**

PART – B

5 a. Explain the different tasks to be accomplished b a text editor for an interactive user computer dialogue. **(10 Marks)**

b. With a neat diagram, explain the working of a typical editor structure. **(10 Marks)**

6 a. What is MACRO? Briefly discuss various data structures required for a design of MACRO PROCESSOR. **(08 Marks)**

b. With regard to machine independent macroprocessor feature, explain the followings :
i) Concatenation of MACRO parameters ii) Generation of unique labels
iii) Conditional MACRO expansion iv) Keyword macro parameters. **(12 Marks)**

7 a. Discuss the characters that used in the meta language as part of standard ASCII character set used in UNIX operating system. **(08 Marks)**

b. What is LEX? Explain the LEX specification format. **(06 Marks)**

c. Write a LEX program to identify the decimal number. **(06 Marks)**

8 a. What is YACC? Explain the different sections used in writing the YACC specification. **(10 Marks)**

b. Write a YACC program to function as a calculator which performs addition, subtraction multiplication, division and unary operations. **(10 Marks)**

* * * * *

USN | | | | | | | | | | |

06CS52

Fifth Semester B.E. Degree Examination, June/July 2011
System Software

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions selecting at least TWO questions from each part.***

PART – A

1 a. Differentiate between system software and application software. **(04 Marks)**

b. Explain the following with reference to SIC/XE machine architecture :
   i) Instruction formats
   ii) Addressing modes
   iii) Data formats
   iv) Register organization. **(10 Marks)**

c. Write an ALP in SIC/XE to add 2 arrays of 100 integers. **(06 Marks)**

2 a. Explain the different data structures used in designing SIC assembler. **(08 Marks)**

b. Discuss pass 1 algorithm of 2 pass assembler. **(10 Marks)**

c. What are assembler directives? Give examples. **(02 Marks)**

3 a. Differentiate between program blocks and control sections. Explain how control sections are processed. **(10 Marks)**

b. Differentiate between literal and immediate operand with example. **(04 Marks)**

c. Discuss different design options of assembler. **(06 Marks)**

4 a. What is a loader? List the functions of a loader. Develop an algorithm for a bootstrap loader. **(10 Marks)**

b. What is dynamic loading? What are its advantages and disadvantages? Explain with a neat diagram loading and calling of a subroutine using dynamic linking. **(10 Marks)**

PART – B

5 a. Explain the structure of a text editor. **(10 Marks)**

b. Describe interactive debugging system. **(10 Marks)**

6 a. Explain various data structures required for the design of a macro processor with an example. **(10 Marks)**

b. Explain any three m/c independent macro processor features. **(10 Marks)**

7 a. Explain the structure of LEX specification with example. **(10 Marks)**

b. Discuss how lexer and parser communicate. **(10 Marks)**

8 a. Write YACC specification to recognize nested If control statements and display the number of levels of nesting. **(10 Marks)**

b. Differentiate between lex and yacc. **(05 Marks)**

c. Define the following terms with examples :
   i) Non – terminals.
   ii) y.tab.h
   iii) Symbol table
   iv) Pattern
   v) Lexical analysis. **(05 Marks)**

* * * * *