Fifth Semester B.E. Degree Examination, May/June 2010
Systems Software

Time: 3 hrs.   Max. Marks:100

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

PART - A

1   a. List out registers used in SIC machine architecture along with their use. **(07 Marks)**
    b. Write a sequence of instructions for SIC/XE to set ALPHA equal to GAMMA* BEETA – 9. (Use register operation). **(05 Marks)**
    c. Write a program in both SIC and SIC/XE to copy a character string 'System Software' to another character string. **(08 Marks)**

2   a. Define the following with an example : i) Operation code table   ii) Symbol table. **(06 Marks)**
    b. Generate the complete object program for the following assembly level program with the symbol table. Assume : **(14 Marks)**

CLEAR = B4	LDT = 74	TD = EO	JEQ = 30
TIXR = B8	JLT = 38	RSUB = 4C	LDCH = 50
WD = DC	X = 1	T = 5	

```
WRREC   START    105D
        CLEAR    X
        LDT      LENGTH
WLOOP   TD       OUTPUT
        JEQ      WLOOP
        LDCH     BUFFER, X
        WD       OUTPUT
        TIXR     T
        JLT      WLOOP
        RSUB
OUTPUT  BYTE     X '05'
BUFFER  RESB     400
LENGTH  RESB     2
        END      WRREC
```

3   a. Describe how the assembler handles literal operands. **(06 Marks)**
    b. Give the format for DEFINE and REFER records. **(06 Marks)**
    c. Explain load and go assembler, with an example. **(08 Marks)**

4   a. With the help of an example, show how relocation and linking operations are performed. **(12 Marks)**
    b. Enlist any four different loader option commands. **(04 Marks)**
    c. Define the following : i) Linking loader   ii) Dynamic linking. **(04 Marks)**

PART - B

5   a. List the important four tasks to be accomplished by a text editor for an interactive user computer dialogue.   (04 Marks)
    b. Discuss three basic types of computing environments for editors.   (06 Marks)
    c. Define tracing and trace back in debugging functions.   (04 Marks)
    d. Write a note on the concept of user interface criteria in a text editor.   (06 Marks)

6   a. Write an algorithm for one pass macro processor.   (10 Marks)
    b. RDBUFF HACRO   & INDEV , & BUFADR , & RECLTH , & EOR   (10 Marks)

& EORCT	SET	% N ITEMS (& EOR)
	CLEAR	X
	CLEAR	A
	+ LDT	# 4096
$ LOOP	TD	= X '& INDEV'
	JEQ	$ LOOP
	RD	= X '& INDEV'
& CTR	SET	1
	WHILE	(& CTR LE & EORCT)
	COMP	= X '0000 & EOR [& CTR]'
	JEQ	$ EXIT
& CTR	SET	& CTR + 1
	END W	
	STCH	& BUFADR, X
	TIXR	T
	JLT	$ LOOP
$ EXIT	STX	& RECLTH
	MEND	

Expand the following macro invocation statements using the above given macro.
i) RDBUFF F1, BUFFER, Length, (04, 12)
ii) RDBUFF F1, BUFFER, Length

7   a. Write a note on ANSI C macro language.   (05 Marks)
    b. Explain the following regular expressions with examples :
        i) [ ]   ii) { }   iii) /   iv) ( )   (08 Marks)
    c. Explain various sections of a LEX specification using a basic word count program by reading from a file.   (07 Marks)

8   a. Define YACC tools. What are the two types of conflicts in YACC? Give examples.   (08 Marks)
    b. Write YACC program to validate a simple arithmetic expression involving operators + , - , * , / .   (08 Marks)
    c. Define and explain the use of YY wva p( ).   (04 Marks)

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Fifth Semester B.E. Degree Examination, December 2010
System 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. Give the target address generated for the following machine instruction:
   i) 032600h   ii) 03C300h   iii) 0310C303h
   if (B) = 006000, (Pc) = 003000, (X) = 000090.   **(06 Marks)**
   b. With respect to Pentium pro architecture, explain the following :   **(10 Marks)**
   i) Instruction format   ii) Registers   iii) Data format   iv) Addressing mode.
   c. Write sequence of instruction for SIC to clear 20 byte string to all blanks.   **(04 Marks)**

2 a. Define assembler directive. Explain the different types of directives used in SIC m/c.   **(08 Marks)**
   b. What is the need of pass 2 assembler? Reason out with a simple example.   **(04 Marks)**
   c. Give an algorithm for pass 1 of 2 pass assembler.   **(08 Marks)**

3 a. Differentiate between literal and an immediate operand. Give an example for each.**(05 Marks)**
   b. Define control section. How does control section differ from the program blocks? Explain with an example.   **(10 Marks)**
   c. With an example, explain the multipass assembler.   **(05 Marks)**

4 a. What do you mean by relocating loaders? Explain the method for relocation as a part of object program.   **(10 Marks)**
   b. Explain, with a figure, dynamic linking. Discuss its advantage.   **(10 Marks)**

PART – B

5 a. List the task performed by document linking process in an interactive system.   **(04 Marks)**
   b. Give the relationship between editing and viewing process.   **(06 Marks)**
   c. Explain the features of interactive debugging system.   **(10 Marks)**

6 a. List m/c independent macro processor features. Explain any two with an example. **(10 Marks)**
   b. With an illustrative example, explain the macro processing features of MASM macro process.   **(10 Marks)**

7 a. Explain the structure of Lex program, with an example.   **(06 Marks)**
   b. Give regular expression for the following :
   i) 'C' – variables   ii) Integer data   iii) Floating point data   **(06 Marks)**
   c. Write Lex program to count the number of words in a text file.   **(08 Marks)**

8 a. Explain shift reduce parsing, with an example.   **(06 Marks)**
   b. Write yacc program to recognize the given arithmetic expression containing +, −, /, × operator with + and − having highest precedence.   **(08 Marks)**
   c. What do you mean by ambiguous grammar? How it can be overcome? Illustrate with an example.   **(06 Marks)**

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