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Fifth Semester B.E. Degree Examination, June/July 2014

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. Explain the instruction formats and addressing modes of SIC/XE. (10 Marks)
- b. Write a program in both SIC and SIC/XE to copy a character string 'system software' to another character string. (10 Marks)
- 2 a. Explain the data structures and pass-1 algorithm of SIC assembler. (10 Marks)
- b. Generate the symbol table and write the object program for the following SIC/XE program:
(Given that: LDX = 04, LDA = 00, LDB = 68, ADD = 18, TIX = 2C, JLT = 38, STA = 0C, RSUB = 4C).

SUM	START	0
FIRST	LDX	#0
	LDA	#0
	+LDB	#TABLE2
	BASE	TABLE2
LOOP	ADD	TABLE, X
	ADD	TABLE2, X
	TIX	COUNT
	JLT	LOOP
	+STA	TOTAL
	RSUB	
COUNT	RESW	1
TABLE	RESW	2000
TABLE2	RESW	2000
TOTAL	RESW	1
	END	FIRST

- 3 a. What are control sections? Explain how linking is performed between control sections. (10 Marks)
- b. Explain how multipass assembler handles the following forward reference:
 - 1 HALFSZ EQU MAXLEN/2
 - 2 MAXLEN EQU BUFFEND-BUFFER
 - 3 PREVBT EQU BUFFER-1
 - 4 BUFFER RESB 4096
 - 5 BUFFEND EQU *

Assume that, when assembler goes to line 4, location counter contains 1034(Hex). (10 Marks)

- 4 a. With source code, explain the working of boot-strap loader. (10 Marks)
- b. Explain machine dependent features of loader. (10 Marks)

PART – B

- 5 a. Explain the overview of editing process. (04 Marks)
b. Explain editor structure with a diagram. (08 Marks)
c. Explain the functions and debugging capabilities of interactive debugging system. (08 Marks)
- 6 a. Explain the data structures used in macro processor with example. (08 Marks)
b. Explain machine independent features of macro processor. (12 Marks)
- 7 a. What are LEX and YACC? Explain the different sections of LEX with example. (10 Marks)
b. What are regular expressions? Explain the characters used in forming regular expressions. (10 Marks)
- 8 a. What is shift/reduce parsing? Explain the parsing of the input “fred = 12 + 13” and represent using parse tree. (10 Marks)
b. Explain the ambiguity in arithmetic expression. What is the ambiguity in parsing $2 + 3 \times 4$? Explain the solution for it. (10 Marks)
