



Fifth Semester B.E. Degree Examination, July/August 2021
System Software

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Define system software with examples. (03 Marks)
- b. Explain the different instruction formats, data types and addressing modes in SIC/XE. (12 Marks)
- c. List some differences between RISC and CISC machines. (05 Marks)
- 2 a. Using the given data, translate source program to object code in HTME format, for the code given below. Use program-counter relative addressing mode. (10 Marks)

	SUM	START	4000	Mnemonic	Value
FIRST	LDX	ZERO		LDX	04
	+LDA	ZERO		LDA	00
LOOP	ADD	TABLE, X		ADD	14
	TIX	COUNT		TIX	2C
	JLT	LOOP		JLT	38
	STA	TOTAL		STA	0C
	RSUB			RSUB	4C
TABLE	RESW	2000			
COUNT	RESW	1			
ZERO	WORD	0			
TOTAL	RESW	1			
	END				

- b. Write the Pass-I algorithm for a two-pass assembler. (10 Marks)
- 3 a. What is a program block? With an example, explain how a program block translation is handled by an assembler. (10 Marks)
- b. Give the different record formats that are generated in the process of conversion of a source program to an object program. (10 Marks)
- 4 a. What are the basic functions of a loader? Write an algorithm for a bootstrap loader. (10 Marks)
- b. Write short notes on:
 - i) Linkage editors
 - ii) Overlay structures. (10 Marks)
- 5 a. With the help of a neat diagram, explain the structure of a basic editor. (10 Marks)
- b. What is a debug monitor? List the steps involved in dynamic debugging. (10 Marks)
- 6 a. Define a macro. Write an algorithm for one-pass macro processor. (10 Marks)
- b. With an example, explain conditional macro expansion. (10 Marks)

- 7 a. Briefly explain shift-reduce parsing. (05 Marks)
b. Consider the following grammar:
S → TL ;
T → int/float
L → L, id/id
Parse the input string int id, id; using shift-reduce parsing. (05 Marks)
c. Write a YACC program for a desktop calculator. (10 Marks)
- 8 a. Explain the lexical phase of a compiler with example. (10 Marks)
b. Write a LEX program to count the number of vowels and consonants in an input string. (10 Marks)

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