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

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Computer Science and Engineering

Make-up Examination; Jan/Feb - 2017

System Software

Time: 3 hrs

Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

- 1 a. Briefly discuss the SIC machine architecture. 10
- b. Write a sequence of instructions for SIC/XE to set ALPHA equal to $(4 * BETA - 9)$. Use immediate addressing for the constants. 10
- 2 a. Explain the following features of SIC/XE architecture : 10
- i) Registers ii) Data formats iii) Addressing mode iv) I/O instructions.
- b. Write SIC instructions to swap the values of ALPHA and GAMMA. 10

UNIT - II

- 3 a. Write a complete algorithm for pass-2 of two pass assembler. 12
- b. Briefly discuss with an example control section concept. 8
- 4 a. Generate the object code for each statement in the following program,

			Mnemonics	Hex code
SUM:	START	0		
FIRST:	LDX	#0	LDX	04
	LDA	#0	LDA	00
	+LDB	# TABLE 2	LDB	68
	BASE	TABLE 2	ADD	18
LOOP:	ADD	TABLE, X	TIX	2C
	ADD	TABLE2, X	JLT	38
	TIX	COUNT	STA	0C
	JLT	LOOP	RSUB	4C
	+STA	TOTAL		
	RSUB			
COUNT:	RESW	1		
TABLE:	RESW	2000		
TABLE 2:	RESW	2000		
TOTAL:	RESW	1		
	END	FIRST		

12

b. Explain the following terms :

- i) Multipass assembler
- ii) Program blocks.

8

UNIT - III

5 a. Briefly discuss and compare SIC and SIC/XE relocation loaders, with suitable algorithms.

15

b. Explain the working principle in processing of an object program using,

- i) Linking loaders
- ii) Linkage editor.

5

6 a. Write a source code for boot strap loader for SIC/XE.

10

b. Explain dynamic linking with loading and calling of a subroutine.

10

UNIT - IV

7 a. Write a complete algorithm of a one pass macro processor.

15

b. Briefly discuss concatenation of macro parameters in macro processor.

5

8 a. Write short notes on :

- i) MASM macro processor
- ii) ANSI C macro processor.

10

b. Briefly discuss recursive macro expansion.

10

UNIT - V

9 a. Write the general structure of LEX. Explain with suitable example.

10

b. List and explain any five meta characters used in LEX.

10

10 a. What is shift reduce parser? Briefly explain the components of shift reduce parser. Give example.

10

b. Write a LEX program to count number of scanf and printf statements and replacing them with readf and writef respectively.

10

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