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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Fifth Semester, B.E. - Information Science and Engineering
Semester End Examination; Dec - 2017/Jan - 2018
System Software

Time: 3 hrs | Max. Marks: 100

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

UNIT - I

1 a.	Compare RISC and CISC architectures.	7
b.	Explain SIC/XE machine instruction formats and all addressing modes. Clearly indicate setting of flag bits.	10
c.	Bring out the differences between system software and application software.	3
2 a.	Write an assembly language program on SIC/XE machine to implement block move from a memory address A_1 to another A_2, without overlap.	8
b.	With reference to SIC and SIC/XE architecture, explain; i) Memory ii) Registers iii) input and output.	8
c.	List and explain the following type of instructions (SIC) : i) Data movement instructions ii) Control instructions Give atleast 2 instructions in each category.	4

UNIT - II

3 a.	Explain any four assembler directives with an example for each.	10
b.	Write and explain the algorithm of one-pass assembler.	10
4 a.	Enlist the various assembler features that are machine-dependent and machine-independent. Explain anyone of them from each.	10
b.	Generate the object code for the below SIC assembly language program. Also show the contents of symbol table at the end of assembling :	10

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

UNIT - III

5 a. Discuss how an object program is processed using :

   i) Linking loader

   ii) Linkage editor.   10

  b. Explain a simple boot-strap loader within algorithm.   10

6 a. Discuss dynamic linking with suitable diagram.   10

  b. What is relocating loader? Explain the methods for specifying relocation as a part of object program.   10

UNIT - IV

7 a. With respect to the machine independent macro-processor features, explain the following :

   i) Concatenation of macro parameters

   ii) Conditional macro expansion.   10

  b. With an illustration example, describe the macro processing features of MASM macro processor.   10

8 a. Write and explain the algorithm for a one pass macro processor.   10

  b. Explain the data structures used in macro processor.   10

UNIT - V

9 a. Write a lex program to remove white spaces and upper case letters from a given input file.   6

  b. Explain the following :

   i) Shift reduce conflict

   ii) Reduce Reduce conflict.   6

  c. Write a complete YACC program to check the validity of an arithmetic expression.   8

10 a. Explain the structure of LEX and YACC programs.   10

  b. Write short notes on the following:

   i) yywrap( )

   ii) yylen( )

   iii) yyparse( ).   10

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