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10CS52

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
System Software

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define system software. Explain SIC/XE machine architecture in detail. (12 Marks)
 b. Assemble the following instructions :

002A	J	@RETADR
0003	+JSUB	WRREC
0000	LDA	#5
0000	STL	RETADR

Where the symbol addresses : WRREC(1036), RETADR(0030) and
 The OPcodes : LDA – 00, JSUB – 48, STL – 14, J – 3C.

(08 Marks)

- 2 a. What is meant by assembler directive? Explain the following directives with suitable example : RESW, LTORG, USE, EQU. (08 Marks)
 b. Write the formats of text record and modification record. (04 Marks)
 c. Explain Pass-1 algorithm of assembler and two major internal data structures used by it. (08 Marks)
- 3 a. How does the assembler handle external references? (10 Marks)
 b. How do the one pass and multipass assemblers handle forward references? (10 Marks)
- 4 a. Explain in detail the SIC relocation loader algorithm with relevant example. (08 Marks)
 b. Write Pass-2 algorithm of linking loader. (06 Marks)
 c. Differentiate the processing of an object program by linking loader and linkage editor. (06 Marks)

PART – B

- 5 a. Describe editor structure with a neat block diagram. (10 Marks)
 b. Explain the different debugging function and debugging capabilities. (10 Marks)
- 6 a. Define Marco. Briefly explain the macroprocessor algorithm and data structure used by it. (12 Marks)
 b. What is nested macro? Write down the procedure for recursive macro expansion. (08 Marks)
- 7 a. List out any six meta characters with suitable examples. (06 Marks)
 b. Write a Lex program to count the words, characters and lines of a given file. (04 Marks)
 c. Explain the lexical analysis phase of compilation and write down the structure of a Lex program. (10 Marks)
- 8 a. State ambiguous grammar with an example. How to eliminate ambiguity? (08 Marks)
 b. Write a Yacc program to design a simple calculator. (08 Marks)
 c. Write down the compilation and execution procedure of a simple Lexer and parser. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.