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 mulitpass 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)**

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