Fifth Semester B.E. Degree Examination, Aug./Sept.2020
System Software

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Explain the architecture of SIC/XE machine. **(12 Marks)**

    b. Suppose that APLHA and BETA are two arrays of 100 wards. Another array of GAMMA elements are obtained by multiplying the corresponding ALPHA element by 4 and adding the corresponding BETA element. Write sequence of SIC/Xe instruction for the above. **(08 Marks)**

2 a. Generate the complete object program for the following SIC/XE program.

SUM	START	0
FIRST	LDX	#0
	LDA	#0
	+LDB	#TABLE2
	BASE	TABLE2
LOOP	ADD	TABLE, X
	ADD	TABLE2, X
	TIX	COUNT
	JLT	LOOP
	+STA	TOTAL
	RSOB	
COUNT	RESW	1
TABLE	RESW	2000
TABLE 2	RESW	2000
TOTAL	RESW	1
	END	FIRST

Assume : LDX = 04, LDA = 00, LDB = 68, ADD = 18, TIX = 2C, JLT = 38, STA = OC, RSOB = 4C. **(10 Marks)**

    b. What are fundamental functions of an assembler? Explain the data structures used in assemblers. **(10 Marks)**

3 a. Write algorithm for one pass assembler. Explain how forward references are handled in one pass assembler. **(10 Marks)**

    b. Give the format of the following records necessary to obtain object program.
      i) Text record   ii) Define record   iii) Refer record
      iv) Modification record (revised)   v) Header record. **(10 Marks)**

4 a. With a diagram, explain how object program can be processed using linkage editor. **(10 Marks)**

    b. Briefly explain the boot strap loader with the algorithm/program. **(10 Marks)**

PART – B

5 a. What is an interactive editor? Explain the typical editor structure. (10 Marks)
   b. Explain different debugging function and capabilities. (10 Marks)

6 a. Write algorithm for one-pass macro processor. (10 Marks)
   b. Explain conditional macro expansion with an example. (06 Marks)
   c. Briefly explain the data structures used in microprocessor. (04 Marks)

7 a. Write regular expression to identify the following :
      i) Identifier   ii) Decimal number   iii) Negative integer   iv) Positive fraction. (08 Marks)
   b. Write a short note on parser – lexer communication. (04 Marks)
   c. Explain three basic sections of a LEX program. (08 Marks)

8 a. Write a YACC program to function like a calculator which perform addition, subtraction, multiplication and division. (10 Marks)
   b. Explain shift reduce parsing with an example. (10 Marks)

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