10CS52



## Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019 System Software

Time: 3 hrs.

Max. Marks:100

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

## PART - A

- Why SIC is called hypothetical computer? Explain SIC machine architecture with respect to registers, instruction format and instruction sets.
  - b. List and explain instruction formats of SIC/XE machine. Find the target address, addressing mode and value of register 'A' for the following machine code using memory address or content given:

P. A.	Address	Content
i) $03C300$ (B) $= 007000$	3030	003600
ii) 010030 (PC) = 005000	3600	103000
iii) $003600$ (X) = $000090$	7390	00C303
	C303	003030
	C303	003030

(10 Marks)

- c. Write a SIC/XE program to add corresponding elements of array A and B, and store result in array C, where array size is 200 words each. (04 Marks)
- 2 What are the steps required to translate source code to object code. Write the format of header, text and end records. (06 Marks)
  - What are the data structures used in assembler? Write pass-2 algorithm of assembler.

(08 Marks)

- Write an object code for following SIC/XE instructions:
  - CLOOP (CLOOP at location 0006)
  - 103C +LDT #4096 (Object code of J is 36h and LDT is 74h)
  - iii) 0020 LDT

(06 Marks)

- a. Explain symbol defining statements and expressions. Identify the type of following expressions:
  - 1. ABCDEF GHIJKL
  - 2. 100 ABCDEF
  - 3. 50 \* GHIJKL
  - 4. XYZABC + ABCXYZ

where all variables represents address within program. (08 Marks)

- b. Explain control section in detail with format of define, refer and modification record (revized). (08 Marks)
- c. What are different assembler design options? Load-and-go assembler is useful in program development and testing, give reasons. (04 Marks)

- 4 a. What are the relocating loaders? Write an algorithm for SIC/XE relocating loader. (06 Marks)
  - b. What are the different loader design options? Explain linkage editor in comparison with linking loader. (08 Marks)
  - c. Explain MS-DOS linker with object module.

(06 Marks)

## PART - B

- 5 a. Define document. What are the tasks accomplished by document editing process? (04 Marks)
  - b. With neat diagram explain structure of editor.

(08 Marks)

c. What are the debugging functions and capabilities?

(08 Marks)

- 6 a. What are the data structures used in macroprocessor? Write an algorithm for DEFINE, EXPAND and GETLINE procedures. (10 Marks)
  - b. Explain any two machine independent macro processor features.

(06 Marks)

c. Explain ANSC C macro processor.

(04 Marks)

7 a. What are the meta symbols? Write any five meta symbols and its use.

(04 Marks) (05 Marks)

- b. Write and explain specification of lex program.
- c. Write a lex program to count number of keywords, relational operations, logical operator and special operators. (06 Marks)
- d. Write LEX program to remove single in line comments in C program using command line arguments. (05 Marks)
- 8 a. What is passer? What is the output expected from parser? Write following CFG in YACC equivalent form

 $A \rightarrow BC + |CD - EF * | \in$ 

(04 Marks)

b. Write a YACC program to evaluate given expression using un-ambiguous grammar.

(08 Marks)

c. What is the need of priority and associativity? Show with program how they are implemented in YACC program. (08 Marks)

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