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16/17MCA25

Second Semester MCA Degree Examination, Dec.2018/Jan.2019
System Software

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing one full question from each module.*

Module-1

1   a. Explain the architecture of SIC machine with respect to registers, data formats, instruction formats and addressing modes. **(08 Marks)**
     b. Write and explain the instruction formats of SIC/XE architecture. **(04 Marks)**
     c. Write an assembly language program in SIC/XE to perform 'ABC = ALPHA * 10-50'. Use register addressing to perform multiplication and subfraction. **(04 Marks)**

OR

2   a. Write the algorithm of PASS-1 of two pass algorithm. **(08 Marks)**
     b. Find the target addressing for the following SIC/XE instruction:
        i) 032600   ii) 03C300   iii) 00B600   iv) 6D101000. **(08 Marks)**

Module-2

3   a. Discuss symbol defining statements used in assembler with example on each. **(08 Marks)**
     b. Generate the object code for following SIC/XE program. [OPCODES : CLEAR = B4, LDS = 6C, ADD = 18, STA = OC].

(08 Marks)

DEMO	START	O
	CLEAR	X
	+LDS	#4096
	ADD	@TAB
	STA	ALPHA, X
ALPHA	RESW	256
TAB	RESB	4
	END	

OR

4   a. Explain the working of load-and-go assembler with proper example. **(08 Marks)**
     b. What is program relocation? Explain how relocation problem of extended format is solved using modification record. **(08 Marks)**

Module-3

5   a. Write the algorithm of an absolute loader. **(04 Marks)**
     b. Give the format of relocation bits used by loader. Explain the same with example. **(04 Marks)**
     c. Illustrate the concept of program linking. Performed by loader with block diagram.

(08 Marks)

OR

6 a. Compare and explain linking loader and linkage editor with diagram. (08 Marks)
  b. Write a note on MSDOS linker. (08 Marks)

Module-4

7 a. Explain the different data structures used by macro processor with block diagram. (10 Marks)
  b. Explain with an example the concatenation of macro parameters. (06 Marks)

OR

8 a. List and explain basic macro processing functions with suitable example. (08 Marks)
  b. Describe the salient features of ANSI C macro processor. (08 Marks)

Module-5

9 a. Write the BNF grammar to the assignment statement of C program for the expression 'SUM = A * (B + 50)'. Generate the parse tree for this expression using the same grammar. (08 Marks)
  b. Briefly discuss different machine dependent code optimization techniques. (08 Marks)

OR

10 a. Using the given finite automata, check whether following strings area recognized or not recognized.
   i) abca   ii) abccccabc   iii) abababcab   iv) abcabcabccaac. (08 Marks)
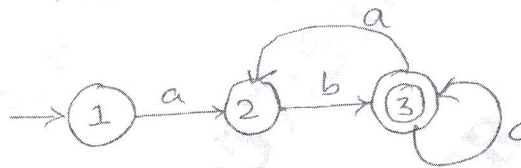

Fig.Q.10(a)

  b. Write a note on:
   i) P-code compiler
   ii) YACC compiler. (08 Marks)

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