CBCS SCHEME

USN [ ][ ][ ][ ][ ][ ][ ][ ][ ]   **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.
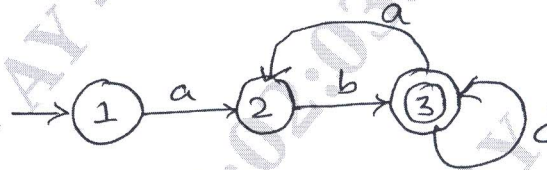   i) abca ii) abccccabc iii) abababcab iv) abcabcabccaac. **(08 Marks)**

Fig.Q.10(a)

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

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