USN | | | | | | | | | | | **18MCA34**

Third Semester MCA Degree Examination, Aug./Sept. 2020
System Software

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Explain the architecture of SIC/XE machine.   **(12 Marks)**
   b. Write the algorithm of Pass – 1 of two – pass Assembler.   **(08 Marks)**

OR

2 a. Explain the VAX Architecture.   **(08 Marks)**
   b. Generate the object code for the following program using the following OPCODES.
      CLEAR = B4, LDS = 6C, ADD = 18, J = 3C.

	START	0
FIRST	CLEAR	X
	+ LDS	#4096
	ADD	@TAB1
ALPHA	RESB	1
TAB1	WORD	256
	END	

                                                                            (08 Marks)
   c. Explain the various data structure used in the assemblers.   **(04 Marks)**

Module-2

3 a. What is program Relocation? Explain how to resolve the relocation problem with an block
      diagram and example.   **(08 Marks)**
   b. Explain MASM assembler in detail.   **(08 Marks)**
   c. Explain following Assembler Directives with example :
      i)   LTORG
      ii) BASE.   **(04 Marks)**

OR

4 a. Explain Control Section. How are these handled by the assembler?   **(06 Marks)**
   b. Write an algorithm for one pass assembler.   **(10 Marks)**
   c. What do you mean by delayed branches in SPARC assembler? Explain with example.
                                                                            (04 Marks)

Module-3

5 a. Explain a simple bootstrap loader with a source program.   **(10 Marks)**
   b. Explain how the program linking is performed by the loader with a block diagram.
                                                                            (10 Marks)

OR

6 a. Explain dynamic linking with neat diagrams.   **(08 Marks)**
   b. Explain linking loader and linkage editor with neat diagrams.   **(06 Marks)**
   c. Write a note on MSDOS Linker.   **(06 Marks)**

Module-4

7 a. Write an algorithm for one – pass macro processor. (10 Marks)
   b. Explain how the ARGTAB is affected in recursive macro expansion with proper example. (10 Marks)

OR

8 a. Explain the different data structures used by macro processor with block diagram. (08 Marks)
   b. Explain the following with examples.
      i) Concatenation of Macro Parameters
      ii) Generation of Unique Labels. (12 Marks)

Module-5

9 a. Explain Recursive Descent Paring. Write recursive descent parse for READ statement. (08 Marks)

   b. Write note on :
      i) P – Code Compiler
      ii) Compiler – Compilers (06 Marks)
   c. Using the given finite automation, check if the following strings are recognized or not.
      i)   abca
      ii) abccccabc
      iii) abaab
      iv) ababcab
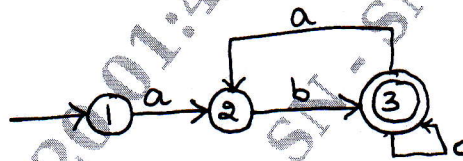   v)   abababab
      vi) abba. (06 Marks)

Fig Q9(c)

OR

10 a. Briefly discuss different machine independent code optimization technique. (10 Marks)
   b. Discuss the following Basic compiler functions:
      i) Lexical Analysis
      ii) Syntactic Analysis. (10 Marks)

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