Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: CS303

Course Name: SYSTEM SOFTWARE

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries3 marks.

		Marks
1	Distinguish between an assembler and a compiler. Which are the different types of compilers?	(3)
2	Briefly describe the format of object program generated by SIC assembler.	(3)
3	'System Software is machine dependent'. Justify the statement.	(3)
4	What are the uses of OPTAB and SYMTAB during the assembling process? Specify the uses of each during pass 1 and pass2 of a two pass assembler.	(3)

PART B

Answer any two full questions, each carries9 marks.

5	a)	List out the differences between system software and application software.	(4)
	b)	Design an algorithm for performing the pass 1 operations of a two pass assembler.	(5)
6	a)	List and explain the different addressing modes and instruction formats used in SIC/XE architecture.	(5)
	b)	Describe in detail about any 4 system softwares.	(4)
7	a)	What will happen if a SIC program is loaded in a location different from the starting address specified in the program? Will the program work properly? Justify your answer.	(3)
	b)	Explain program relocation with examples. Is there a need to use modification records for the given SIC/XE program segment? Explain your answer. If yes, show the contents of modification record.	(6)

```
0000  COPY      START   0
.....
0006              +JSUB   RDREC
000A              LDA     LENGTH
.....
0033  LENGTH    RESW    1
.....
1036  RDREC     CLEAR   X
```

PART C

Answer all questions, each carries3 marks.

8	Explain the format of Define and Refer Records. What are their uses?	(3)
9	What is a multi pass assembler? Explain with the help of an example, a situation	(3)

where we would need such an assembler.

10 Design an algorithm for an absolute loader. (3)

11 Differentiate between linking loader and linkage editor. (3)

PART D

Answer any two full questions, each carries9 marks.

12 a) Describe the concept of program blocks with a proper example. (4)

b) Explain the working of a single pass assembler with an example. (5)

13 a) Justify the need for having two passes in a linking loader. Illustrate the data structures used for a linking loader, showing how they are used in each pass. (4)

b) Give the algorithm for pass 2 of a linking loader. (5)

14 a) List and explain the different machine independent loader features. (4)

b) What are control sections? Illustrate with an example, how control sections are used and linked in an assembly language program. (5)

PART E

Answer any four full questions, each carries10 marks.

15 a) Differentiate between character and block device drivers. (4)

b) Explain the structure of text editor with the help of a diagram. (6)

16 a) What are the data structures required for a macroprocessor algorithm? Explain the format of each. (4)

b) Design an iterative algorithm for a one pass macroprocessor. (6)

17 a) List and explain the different debugging techniques. (5)

b) Write notes on conditional macro expansion. (5)

18 a) Differentiate between a macro and a subroutine. Illustrate macro definition and expansion using an example. (5)

b) Describe the user interfaces used in a text editor. (5)

19 Explain the general design and anatomy of a device driver with the help of diagrams. (10)

20 a) What do you mean by recursive macro expansion? What are the possible problems associated with it? (5)

b) Is it possible to use labels within the macro body? Explain your answer with the help of examples. Also illustrate a possible solution for the same. (5)