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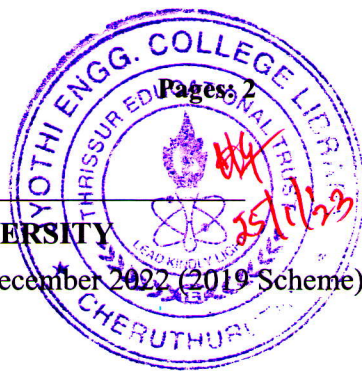
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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2022 (2019 Scheme)



Course Code: CST 305

Course Name: SYSTEM SOFTWARE

Max. Marks: 100

Duration: 3 Hours

**PART A**

*(Answer all questions; each question carries 3 marks)*

Marks

- |    |  |   |
|----|--|---|
| 1  | Distinguish between interpreter and compiler.                              | 3 |
| 2  | List any three registers available in SIC machine along with their purpose | 3 |
| 3  | List out the basic functions of Assemblers                                 | 3 |
| 4  | Write an SIC program to swap the values of ALPHA and BETA                  | 3 |
| 5  | With an example explain any two symbol defining statements?                | 3 |
| 6  | Define a program block. How it is created?                                 | 3 |
| 7  | List the basic functions of a loader                                       | 3 |
| 8  | Define a modification record along with its structure                      | 3 |
| 9  | Illustrate the concept of macro definition with an example                 | 3 |
| 10 | What are the two parts of a device driver?                                 | 3 |

**PART B**

*(Answer one full question from each module, each question carries 14 marks)*

**Module -1**

- |    |  |   |
|----|--|---|
| 11 | a) Write notes on SIC machine architecture   | 8 |
|    | b) What are assembler directives? List any four assembler directives in SIC machine. | 6 |
| 12 | a) Elucidate the architecture of SIC/XE machine                                      | 8 |
|    | b) Compare the features of Standard SIC and SIC/XE architecture                      | 6 |

**Module -2**

- |    |  |   |
|----|--|---|
| 13 | a) Write a sequence of instructions for SIC/XE to divide BETA by GAMMA, setting ALPHA to the integer portion of the quotient and DELTA to the remainder. Use register to-register instructions to make the calculation as efficient as possible. | 5 |
|----|--|---|

- b) Illustrate the use and structure of three records used in object program 3
- c) Explain the data structures used and their purposes in a two-pass assembler 6
- 14 a) Suppose ALPHA is an array of 100 words. Write SIC/XE program to set all array elements to zero. 6
- b) Design an algorithm for pass 1 operations of a two pass assembler for SIC architecture. 8

### Module -3

- 15 a) Write short notes on MASM assembler 7
- b) Employ the following code to explain the concept of multipass assembler 7

1	A	EQU	B/2
2	B	EQU	C-D
3	E	EQU	D-1
4	D	RESB	4096
5	C	EQU	*

- 16 a) Outline in detail **Load-and-go** Single Pass Assembler Algorithm 7
- b) What are control sections? Illustrate with an example, how control sections are used and linked in an assembly language program. 7

### Module -4

- 17 a) Write notes on machine independent loader features. 8
- b) Which are the data structures used during the operation of a linking loader? Write the algorithm for Pass 2 of a Linking Loader 6
- 18 a) Give the algorithm for an absolute loader 6
- b) Write notes on the different loader design options 8

### Module -5

- 19 a) Explain the working of One pass Macro Processor along with algorithm 6
- b) Explain the types of macro with example 8
- 20 a) Write notes on text editor 7
- b) Discuss the features of device drivers 7

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