

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018**

**Course Code: CS303**

**Course Name: SYSTEM SOFTWARE (CS)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks*

Marks

- |   |   |     |
|---|---|-----|
| 1 | Write notes on SIC machine architecture.  | (3) |
| 2 | Explain the syntax of the records in the Object Program File.                   | (3) |
| 3 | What are assembler directives? List out any five assembler directives in SIC.   | (3) |
| 4 | Explain the different data structures used in the implementation of Assemblers. | (3) |

**PART B**

*Answer any two full questions, each carries 9 marks*

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|---|---|-----|
| 5 | a) Briefly discuss the architecture of SIC/XE machine.  | (5) |
|   | b) Write a subroutine for SIC/XE that will read a record into a buffer. The record may be any length from 1 to 100 bytes. The end of record is marked with a “null” character (ASCII code 00). The subroutine should place the length of the record read into a variable named LENGTH. Use immediate addressing and register-to-register instructions to make the process as efficient as possible. | (4) |
| 6 | Explain the two passes of the assembler algorithm with proper example.  | (9) |
| 7 | a) With suitable example, explain the concept of Program Relocation.  | (5) |
|   | b) List out the basic functions of Assemblers with proper examples.   | (4) |

**PART C**

*Answer all questions, each carries 3 marks*

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|----|--|-----|
| 8  | What is a Literal? How is a literal handled by an assembler? | (3) |
| 9  | Explain the algorithm for an absolute loader.                | (3) |
| 10 | Write notes on Multi pass assemblers.                        | (3) |
| 11 | What is Automatic Library Search.                            | (3) |

**PART D**

*Answer any two full questions, each carries 9 marks*

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|----|--|-----|
| 12 | a) With example, write notes on Program Blocks.  | (5) |
|    | b) What is a forward reference? How are forward references handled by a single pass assembler? | (4) |
| 13 | With the data structures used, state and explain two pass algorithm for a linking loader.      | (9) |
| 14 | a) Explain how external references are handled by an assembler.                                | (5) |
|    | b) What is Dynamic Linking? Explain with example.  | (4) |

**PART E**

*Answer any four full questions, each carries 10 marks*

- 15 Explain the Macroprocessor algorithm. (10)
- 16 a) What are the different data structures used in the implementation of the Macroprocessor algorithm? Give examples. (5)
- b) Write notes on Recursive Macro Expansion. (5)
- 17 a) How are unique labels generated in a Macro Expansion? (5)
- b) Explain Conditional Macro Expansion with an example. (5)
- 18 a) Explain the general design of device driver. (5)
- b) Differentiate between Character and Block Devices. (5)
- 19 a) Explain the different types of Text Editors and User Interface. (5)
- b) Explain Editor structure in detail with neat figures. (5)
- 20 a) What is a Debugger? (4)
- b) Explain the different debugging methods in detail. (6)

