



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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019**

**Course Code: CS303**

**Course Name: SYSTEM SOFTWARE**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks.*

- |   |  | Marks |
|---|--|-------|
| 1 | Explain three functions of Operating System  | (3)   |
| 2 | Write a sequence of instructions for SIC/ XE to find the average of three numbers, BETA, GAMMA and DELTA.                      | (3)   |
| 3 | Explain the format of the object program generated by a two-pass SIC Assembler, highlighting the contents of each record type. | (3)   |
| 4 | Explain the data structures used and their purposes in a two-pass assembler.   | (3)   |

**PART B**

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

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|---|---|-----|
| 5 | Compare the features of Standard SIC and SIC/XE architecture.                       | (9) |
| 6 | a) Explain assembler directives. List any four assembler directives in SIC machine. | (5) |
|   | b) Explain the concept of program relocation with an example.                       | (4) |
| 7 | Write the algorithms for Pass 1 and Pass 2 of a two-pass assembler                  | (9) |

**PART C**

*Answer all questions, each carries 3 marks.*

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|----|---|-----|
| 8  | Differentiate Define record and Refer record.   | (3) |
| 9  | Explain how forward references are resolved during program assembling in a single pass assembler. | (3) |
| 10 | Give the absolute loader algorithm.   | (3) |
| 11 | Explain the concept of Automatic Library Search.  | (3) |

**PART D**

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

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|----|--|-----|
| 12 | Differentiate Program Blocks and Control Sections. Explain how address calculation is performed in the case of Program Blocks. | (9) |
| 13 | a) Explain the working of Multipass Assemblers with an example.  | (5) |

- b) Explain Dynamic Linking with an example (4)
- 14 Which are the data structures used during the operation of a linking loader? Write the algorithm for Pass 2 of a Linking Loader (9)

### PART E

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

- 15 a) A code segment need to be repeatedly used in various parts of assembly language program and fast execution is also needed. Would you use a macro or a subroutine? Justify your answer with help of examples. (5)
- b) List and explain the different design options available for macroprocessors. (5)
- 16 Certain macro processor features are independent of the machine architecture. Give the details of such machine independent macro-processor features. (10)
- 17 Write the algorithm for one pass macro processor and explain the process, showing when and how the different data structures are used. (10)
- 18 Using a neat diagram, explain the structure of a text editor. (10)
- 19 A new hardware device is plugged into a system. Which is the appropriate system software needed for the proper working of the new hardware? Give its functionalities and general architecture. (10)
- 20 Write down the situations where debugging by induction, deduction and backtracking are used, explaining each process. (10)

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