Register No.: ………………………………   Name: ………………………………………………………

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022
COMPUTER SCIENCE AND ENGINEERING
(2020 SCHEME)

Course Code :   **20CST305**

Course Name: **System Software**

Max. Marks :   **100**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. List out the differences between system software and application software.
2. Explain three functions of Operating Systems.
3. 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.
4. What is meant by forward reference? How is it resolved by Two Pass Assembler?
5. What is Literal? How is literal handled by an Assembler?
6. With proper examples, state the difference between EXTDEF and EXTREF Assembler directives?
7. Explain Absolute Loader algorithm?
8. Explain the concept of Automatic Library Search?
9. What is conditional macro expansion?
10. What is the function of a Debugger?

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

MODULE I

11. a) Explain the architecture of SIC machine.   (7)
    b) What are the various addressing modes supported by SIC/XE? (7) With the help of an example, explain how to find target address during assembling in each case.

OR

12. a) Explain the architecture of SIC/XE machine.   (9)
    b) Describe in detail about any 4 system software?   (5)

MODULE II

13. a)   Write the algorithms for Pass I and Pass II of a Two Pass Assembler.   (9)

     b)   Explain the format of the object program generated by a two-pass SIC Assembler, highlighting the contents of each record type.   (5)

OR

14. a)   Let A, B & C are arrays of 10 words each. Write a SIC/XE program to add the corresponding elements of A & B and store the result in C?   (5)

     b)   Explain Hand Assembly Of SIC/XE program?   (9)

MODULE III

15. a)   Write a note on any 2 Machine dependent Assembler features?   (6)

     b)   Explain the working of Multi Pass Assemblers with an example?   (8)

OR

16. a)   How are Control Sections different from Program Blocks? Explain how address calculation is done in the case of Program Blocks?   (9)

     b)   Write a short note on MASM Assembler?   (5)

MODULE IV

17. a)   With the data structures used, state and explain algorithm for Two Pass Linking Loader?   (10)

     b)   Differentiate between linking loader and linkage editor?   (4)

OR

18. a)   What is Dynamic Linking? Explain with example?   (4)

     b)   Explain the algorithm for Boot Strap Loader?   (10)

MODULE V

19. a)   Draw the structure of a typical Text editor and describe the functions of each block?   (9)

     b)   Distinguish between Character and Block Device Drivers?   (5)

OR

20. a)   Write the algorithm for one pass macro processor and explain the process, showing when and how the different data structures are used?   (10)

     b)   How are unique labels generated in Macro Expansion?   (4)

****