53 (CS 501) SYPR

2021

SYSTEM PROGRAMMING

Paper : CS 501

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Discuss von Neumann machine architecture in detail. 10

   (b) Discuss Instruction Cycle State Diagram. 10

2. *(a)* For the given expression, write three and one address instructions.

   $X = (A/B) * (C + D)$ 10

   (b) Explain various types of addressing modes. 10

Contd.

3. *(a)* Explain various states of language translation from high level to machine code. 10

(b) Explain different assembly language statements with example. 10

4. *(a)* Write an assembly language program to find the factorial of an integer ($N!$). 10

(b) Write variant I form of the intermediate code of assembly statements obtained in Q. 4. *(a)*. 10

5. *(a)* Explain analysis and synthesis phase of an assembler by clearly stating their tasks. 10

(b) Describe following data structures : 10

OPTAB, SYMTAB, LITTAB and POOLTAB

6. *(a)* Define *two* macros of your choice to illustrate nested calls to these macros. Also show their corresponding expansion. 10

(b) Describe the role of linker and loader and their types. 10

7. Write short notes on following : 20

(i) Compiler and various states of compiler

(ii) Advanced Assemble Directives

(iii) Self-relocating program

(iv) Dynamic Memory Allocation.