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***B.Tech. Degree V Semester Supplementary Examination
November 2021***

**CS 15-1502 SYSTEM PROGRAMMING
(2015 Scheme)**

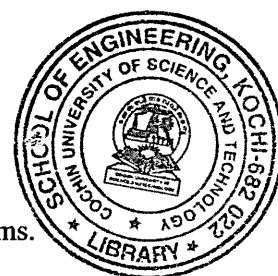
Time: 3 Hours

Maximum Marks: 60

**PART A
(Answer ALL questions)**

(10 × 2 = 20)

- I. (a) What are assemblers? Explain its functions.
 (b) Explain how SYMTAB is used in assemblers.
 (c) Explain modification records.
 (d) Differentiate between immediate operands and literals.
 (e) Explain the design of absolute loaders.
 (f) Discuss the methods for specifying relocation as a part of object programs.
 (g) Explain concatenation of macro parameters.
 (h) Explain recursive macro expansion.
 (i) Explain object-oriented operating system.
 (j) Write notes on user interface and run-time environment



PART B

(4 × 10 = 40)

- II. (a) Write short notes on machine independent assembler features. (6)
 (b) Explain how the forward reference problem is handled in a one pass assembler. (4)
- OR**
- III. Discuss the algorithm for a two pass assembler with the necessary data structures. (10)
- IV. Explain the algorithm for linking loaders with the necessary data structures. (10)
- OR**
- V. (a) Explain bootstrap loaders. (5)
 (b) Compare linking loader and linkage editors. (5)
- VI. Explain:
 (i) Conditional Macro expansion (10)
 (ii) Keyword macro parameters
 (iii) Generation of unique labels in macro
- OR**
- VII. Explain the algorithm for a single pass macro processor with the different data structures. (10)
- VIII. Compare multiprocessor operating system and distributed operating systems. (10)
- OR**
- IX. Explain the following:
 (i) Virtual Machine (5)
 (ii) Functions of Operating System (5)