

**A-1274**

Total Pages : 3

Roll No. ....

**BCA-20**

**Bachelor of Computer Application (BCA)**

**System Programming**

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 70

*Note :-* This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**Long Answer Type Questions** (2×19=38)

*Note :-* Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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( 1 )

P.T.O.

1. Explain in detail the phases of a language processor. Discuss the role of lexical analysis, syntax analysis, and semantic analysis with suitable examples.
2. Design a context-free grammar (CFG) for arithmetic expressions involving operators  $+$ ,  $-$ ,  $*$ ,  $/$ , and parentheses. Then construct a parse tree for the expression :  $(A + B) * C - (D / E)$ .
3. Discuss the design of a two-pass assembler. Explain the tasks performed during Pass I and Pass II with the help of an example.
4. Explain the process of code optimization. Discuss local and global optimization techniques used in compilers.
5. What is a linker ? Explain relocation and linking concepts in detail. Describe the design of a linker for overlay structures.

### **Section–B**

#### **Short Answer Type Questions (4×8=32)**

**Note** :- Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Differentiate between compiler and interpreter with examples.
2. Define regular expression. Explain how finite state automata are used in scanning
3. Write short notes on the following :
  - (a) Assembly language statement format
  - (b) Intermediate code forms.
4. What are triples and quadruples ? Explain their use in intermediate code generation.
5. Explain the concept of parameter passing mechanisms in compilers.
6. Describe the structure and function of a symbol table.
7. A linker combines two object modules of sizes 4 KB and 6 KB, with a load origin address of  $0 \times 1000$ . Find the load addresses for both modules and the starting address of the next module.
8. Explain the role of language processor development tools LEX and YACC.

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