

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2023
(Fifth Semester)

Branch – COMPUTER SCIENCE
PRINCIPLES OF COMPILER DESIGN

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions
ALL questions carry EQUAL marks (5 x 1 = 5)

1. Compiler should report the presence of -----in the source program, in translation process.
(i) classes (ii) Objects
(iii) Errors (iv) Text
2. Lexical analysis is about breaking a sequence of character into-----.
(i) Groups (ii) Packets
(iii) Lines (iv) Tokens
3. Syntax directed translation scheme is desirable because -----
(i) It is based on Syntax
(ii) Its Description based on Implementation
(iii) It is easy to modify
(iv) All of these
4. -----are the data structure that are used by the compilers to hold information about source program constructs.
(i) Symbol Tables (ii) semantic analysis
(iii) Packet (iv) Text
5. Which of the following is not a common type of register allocation algorithm?
(i) Graph coloring (ii) Loop unrolling
(iii) Spilling (iv) Linear scan

SECTION - B (15 Marks)

Answer ALL Questions
ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Clarify the concept of Intermediate Code Generation.
OR
b Outline the terms of Symbol Table.
- 7 a Let $\Sigma = \{a,b\}$. For each of the following languages over Σ , find a regular expression representing it:
(i) All string that exactly contain one 'a'.
(ii) All string beginning with 'ab'.
(iii) All string that contain either the sub-string 'aaa' or 'bbb'.
OR
b State the rules, which defines regular expression?
- 8 a Describe the formal definition of Context-free Grammar.
OR
b Examine Syntax Directed definitions.

Cont...

- 9 a Discuss the primary task of Code Generator.
OR
b Write short notes on Code Optimization.
- 10 a Explain the concept of global register allocation.
OR
b Outline the terms of code generation using DAG with an example.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a Differentiate between Compiler and Interpreter.
OR
b Sketch and explain the various phases of compiler.
- 12 a Describe the role of Lexical Analyzer with neat diagram.
OR
b Explain the concept of Input buffering.
- 13 a Illustrate the terms of Bottom-up parsing with neat diagram.
OR
b How to construct the SLR parsing table? Give an example.
- 14 a Explain the process of syntax directed translation of three address code.
OR
b Explain Machine Independent optimization.
- 15 a Summarize the various problems in the Design of a Code Generator.
OR
b Determine the steps involved in Dynamic Programming Code-Generation and write its algorithm

Z-Z-Z

END