PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Fifth Semester)

Branch – COMPUTER SCIENCE

PRINCIPLES OF COMPILER DESIGN

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks

(10 x 1 = 10)

1 Users write the programs in which language?

    (i) Low-Level   (ii) High-Level
    (iii) Decimal-Format   (iv) Middle-Level

2 Which Computer Programs accepts the high-level language and converts it into Assembly language?

    (i) Set of Regular Expression   (ii) Syntax Tree
    (iii) Set of Tokens   (iv) String Character

3 What is the output of Lexical Analyzer?

    (i) Stakeholders   (ii) Facilitator
    (iii) Inception   (iv) Perception

4 Lexical Analyzer is the ____ Phases of a Compiler.

    (i) First   (ii) Second
    (iii) Third   (iv) Fourth

5 How many components does the context-free grammar has?

    (i) 2   (ii) 3
    (iii) 4   (iv) 5

6 A Set of tokens, are known as ?

    (i) non-terminals   (ii) terminal symbols
    (iii) productions   (iv) start symbol

7 Which of the following is not an Intermediate Code Form?

    (i) Syntax Trees   (ii) Three address codes
    (iii) Quadruples   (iv) Post fix Notation

8 Which of the following is not a form of Intermediate representation?

    (i) Abstract Syntax Tree   (ii) 3-address code
    (iii) Directed Cyclic Graph   (iv) Reverse Polish Notation

9 ___ is a tool that depicts the structure of basic blocks, helps to see the flow of values flowing among basic blocks, and offers optimization too.

    (i) DAG   (ii) CAG
    (iii) SAG   (iv) PAG

10 Code Generation can be considered as the ?

    (i) First Phase   (ii) Second Phase
    (iii) Third Phase   (iv) Final Phase

Cont...

SECTION - B (25 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 5 = 25)

11 a   Analyze in detail the Intermediate Code Generation with an example.

OR

b   Explain in brief about the Compiler Writing Tools with an example.

12 a   Describe in detail about the Role of Lexical Analyzer with an example.

OR

b   Show the structure of Regular Expression with an example.

13 a   Show the working of Shift Reduce Parsing with an example.

OR

b   Show the working of Predictive Parsing with an example.

14 a   Explain with Example Syntax-directed Translation into Three-address code.

OR

b   Outline the Assignment Statement in Intermediate Code Generation with example.

15 a   Describe Simple Code Generation with an example.

OR

b   Explain in brief about DAG Representation of Basic Blocking with an example.

SECTION -C (40 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 8 = 40)

16 a   Elucidate in detail about the Structure of a Compiler with neat diagram.

OR

b   Assess in brief about various types of Code Optimization with example.

17 a   Point Out in brief about the Data Structure for representing a Transition Diagram.

OR

b   Convert NFA to DFA for the following Regular Expression $a(a|b)^*ab$.

18 a   Enumerate in detail about the working of Top-Down Parsing example with an algorithm.

OR

b   Examine the working of Operator Precedence Parsing with an example.

19 a   Infer in detail about the Loop Optimization in Code Optimization with an example.

OR

b   Outline in detail about the Peephole Optimization with an example.

20 a   Point Out the Problems in code Generator Design.

OR

b   Discuss in detail about various Register Allocation by Graph Coloring with example.

Z-Z-Z   END