Question Paper Code: U6201

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Computer Science Engineering

21UCS601- PRINCIPLES OF COMPILER DESIGN

(Regulation 2021)

Duration: Three hours   Maximum: 100 Marks

PART A - (5 x 1 = 5 Marks)

1. _____ is considered as a sequence of characters in a token.   CO1- U

    (a) Texeme   (b) Pattern   (c) Lexeme   (d) Mexeme

2. Which of the following are kernel items?   CO1- U
    i) E→.E+T   ii)S'→.S   iii)T→T.*F   iv) .(E)
    (a) i,ii only   (b) i,iii only   (c) ii and iii only   (d) i and iv only

3. The postfix equivalent of (a+b)*(c+d)is ----------------   CO2- App

    (a) ab+cd+*   (b) ab+cd*+   (c) *+ab+ab   (d) ab+*ab+

4. Which of the following known as the text part of a program that does   CO1- U
   not change at runtime. Its memory requirements are known at the
   compile time?
    (a) Code   (b) Procedures   (c) Variables   (d)All of the above

5. How many points can we define for the basic block with 8   CO1- U
   statements?
    (a) 9   (b) 8   (c) 7   (d) 10

PART – B (5 x 3= 15 Marks)

6. Compare Compiler and Interpreter.   CO1 -U

7. What is Handle Pruning?   CO2 -U

8. Construct Syntax Directed Translation of given arithmetic expressions   CO2-App
   a:=b*-c+b*-c

9. What are the limitations of stack allocation?   CO1-U

10. What are the criteria for code improving transformations?   CO1-U

PART – C (5 x 16= 80 Marks)

11. (a) Explain various phases of compiler with neat sketch. With   CO2-App (16)
         example.a=b*c-d

Or

(b)	Convert the given regular expression (a+b)* abb (a+b)* into NFA Using Thompson construction method and then to minimized DFA	CO2-App	(16)

12. (a) Check whether the following grammar is a LL (1) grammar.   CO2-App   (16)
S →iEts | iEtSeS | a
E → b
and Parse the string "ibtibtaea"

<div align="center">Or</div>

(b) Construct LALR parsing table for the grammar   CO2-App   (16)
    S→CC
    C→cC|d

13. (a) Explain in detail the different representation of three address code   CO1-U   (16)
<div align="center">Or</div>
(b) Explain the translation of Arithmetic expressions in detail.   CO1-U   (16)

14. (a) Describe the issues in design of code generator.   CO1-U   (16)
<div align="center">Or</div>
(b) Explain in detail about storage allocation strategies.   CO1-U   (16)

15. (a) Differentiate between copy propagation and constant propagation. CO1- U   (16)
What are the benefits of these two methods with respect to
optimization?
<div align="center">Or</div>
(b) What is data flow graph? Write down equations for the definitions CO1- U   (16)
of the variables, variables available at the input of each node, and
the live variables on the exit of the node. Relate these equations for
optimizing the code.

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