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Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 96201

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Sixth Semester

Computer science and Engineering

19UCS601- PRINCIPLES OF COMPILER DESIGN

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (5x 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 is a top down parser?   CO1- U

    (a) recursive descent parser   (b) shift reduce parser

    (c) operator precedence parser   (d) SLR parser

3. Intermediate code is ----------   CO1- U

    (a) independent of source language   (b) independent of target machine

    (c) dependent of source language   (d) dependent of target machine

4. In activation record, Which of the following Stores the address of   CO1- U
   activation record of the caller procedure?

    (a) Access Link   (b) Actual Parameters   (c) Control Link   (d) Temporaries

5. The graph that shows basic blocks and their successor relationship is   CO1- U
    called_____

    (a) DAG   (b)Flow graph   (c) control graph   (d) Hamiltonion graph

PART – B (5 x 3= 15Marks)

6. Illustrate the language processing system.   CO1- U

7. Draw the syntax tree of the statement a=a+b*(e/f) Draw the syntax tree of   CO2- App
   the statement a=a+b*(e/f)

8. Draw the quadruple structure for the following statement x= -a*b+-a*b. CO2- App

9. What are the fields of activation record?. CO4- R

10. What is common sub expression? CO5- R

PART – C (5 x 16= 80Marks)

11. (a) Write the regular expression for the pattern starting and ending with any number of digits with at least two letters in it over $\sum$={letter,digit}.Derive the DFA for the given pattern. CO2-App (16)

Or

(b) Derive DFA for the regular expression (a+b)* abb (a+b)* CO2-App (16)

12. (a) Design a predictive parser for the following grammar and also and parse the string (a) CO2- App (16)

$$S \rightarrow a \mid \uparrow \mid (T)$$
$$T \rightarrow T, S \mid S$$

Or

(b) Construct SLR parser for the following grammar and parse the string cdcd. CO2- App (16)

$$S \rightarrow CC$$
$$C \rightarrow cC$$
$$C \rightarrow d$$

13. (a) Explain in detail the various representation of intermediate code. CO1-U (16)

Or

(b) Explain in detail the different representation of three address code. CO1-U (16)

14. (a) What is Activation Record in stack allocation and explain each field in it. CO1- U (16)

Or

(b) Describe in detail about Heap Management CO1- U (16)

15. (a) Differentiate between copy propagation and constant propagation. What are the benefits of these two methods with respect to optimization? CO1-U (16)

Or

(b) Describe peephole optimization with necessary examples CO1-U (16)

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