BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Tech.(CSE)-2018/B.Tech.(CSE)-2019/B.Tech.(CSE)-2020
Course Name – Compiler Design
Course Code - PCC-CS601
(Semester VI)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Grammar of the programming is checked at _____ phase of compiler. Select the correct answer.

a) Semantic analysis b) Syntax analysis
c) Code optimization d) Code generation

(ii) Identify the correct option for which_____ is considered as a sequence of characters in a token.

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

(iii) Which of the following is the most powerful parser, choose the correct answer

a) CLR b) LALR
c) SLR d) Operator precedence

(iv) What is a process of finding a parse tree for a string of tokens, choose the correct answer

a) Tokenizing b) Recognizing
c) Analysing d) Parsing

(v) Select the correct answer for the regular expression 1*(01*01*)* denotes

a) set of all strings of 0's and 1's with even number of 0's b) set of all strings of 0's and 1's
c) set of all strings of 0's and 1's with odd number of 1's d) None of these

(vi) Consider the program statement x=2 where x is a Boolean variable. Which stage of compilation can detect the error, select the correct answer?

a) Lexical analysis b) Syntax analysis
c) Semantic analysis d) Code generation

(vii) The bottom-up parsing method is also called _____, select the correct answer

a) Shift reduce parsing b) Predictive parsing

c) Recursive descent parsing d) None of these

(viii) Shift reduce parsers are _____, select the correct answer

a) Top down Parser b) Bottom Up parser
c) May be top down or bottom up d) None of the mentioned

(ix) Identify the correct answer for the transitional function of a DFA?

a) Q X Σ→Q b) Q X Σ→2Q
c) Q X Σ→2n d) Q X Σ→Qn

(x) choose the correct answer for the grammar S → ab is given. FOLLOW(S)=?

a) {a} b) {b}
c) {$} d) {a,$}

(xi) Which phase of the compiler is Syntax Analysis? choose the correct answer.

a) First b) Second
c) Third d) None of the mentioned

(xii) Select a grammar that produces more than one parse tree for some sentence is called as

a) Ambiguous b) Unambiguous
c) Regular d) All of these

(xiii) Select the correct answer that lexical analysis is about breaking a sequence of characters into

a) Groups b) Packets
c) Lines d) Tokens

(xiv) A grammar for a programming language is a formal description of _____, choose the correct answer.

a) Syntax b) Semantics
c) Structure d) Library

(xv) Select the correct answer for compiler should report the presence of _____ in the source program, in translation process.

a) Classes b) Objects
c) Errors d) Text

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe the token,pattern,lexeme (3)
3. Explain loop unrolling with an example. (3)
4. Illustrate the procedure by which left recursion can be eliminate from the following grammar E → E + T | T T → T * F | F F → id (3)
5. Explain Annotated parse tree (3)
6. Summarize the Peephole Optimization (3)

OR

Summarize the machine dependent code optimization (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain the differences between the NFA and DFA? (5)
8. Summarize the various Compiler Construction Tools. (5)
9. Describe the LL(1) parsing table by following grammar E → E + T | T T → T * F | F F → (E) | id (5)
10. "Consider the following productions of a grammar- S → AA , A →aA | b (i)Construct the LR(0) parsing table (ii)Generate an action chart for the input string “ aabb” Draw the parse tree" (5)

11. "Explain the following terms a) Role of peephole optimization in compilation process b) Issues in the design of a code generator." (5)
12. "How would you construct the following into intermediate code. (i) Assignments statements. (ii) Case statements" (5)

OR

Write about the input buffering scheme in lexical analyzer. (5)

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