Enroll. No._____

MARWADI UNIVERSITY

Faculty of TECHNOLOGY

COMPUTER ENGINEERING/ INFORMATION TECHNOLOGY

[B.TECH.] SEM: 6 SUMMAR:2019

Subject: - Compiler Design (01CE0601) **Date :- 08/04/2019**

Total Marks:-100 **Time: - 03:00 hours**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) Answer below the given MCQs [10]

1. Which one is not under cousins of compiler?

   A: Pre-processor B : Assembler C: Loaders and Linkers D: Activation Record

2. Syntax tree generated by the _____ Phase of compiler.

   A: Lexical Analyzer C: Code Generator

   B: Syntax Analyzer D: Code Optimizer

3. _____ takes entire program as an input.

   A: Compiler B : Interpreter C: A and B D: None of these

4. Quadruple Table contain how many Colum?

   A: 3 C:1

   B: 4 D:2

5. Which of the following is not include in the front end?

   A: Lexical Analzer B : Target Code Generation C: Semantic Analyzer D: Intermediate Code Generation

6. S→ aBCde B→ f | g C→ h

   According to given grammar, Which one of the following is follow the Left Most Derivation?

   A: afCde B : aBCdg C: aBhde D: None of these

7. Which of the following is not present in the Activation Record?

   A: Temporaries B : OptionalAccess Links C: Semantic Link D: Optional Control Links

8. Which one is Top down Parsing?

   A: Shift Reduce Parser B : Predictive Parsing C: SLR D: LALR

9. A grammar that produces more than one parse tree for some sentence is called

   A: Ambiguous B : Unambiguous C: can be A or B D:None of these

10. The Lexical Analysis Phase divide program and generate the _____.

A: Stack B : Semantic Rules C: Array D: Tokens

(b) Define the following [10]

I. Handle and Handle Pruning with example.
II. Left Most Derivation and Right Most Derivation
III. Draw Syntax tree for given grammar z=a+b*c
IV. Remove Left Factoring from the given grammar.
E→abc | abd
C→fgh | fg
V. Explain Pattern, Tokens and Lexeme.

Question: 2.

(a) Give the name of Front End and Back End with explanation, and take one example to show the output of the every phase. [08]

(b) Draw NFA using Thompson's rule and convert following expression into DFA and also show the minimization of DFA. (a | b)*a. [08]

OR

(b) Draw DFA from given expression using first pos, last pos and follow pos. (a | b)*abb. [08]

Question: 3.

(a) Check whether the given grammar is LL (1) or not? [08]
S→ aAC | bB
A→ Abc | Abd | e
B→ f | g
C→ h | i

(b) Remove Left Recursion from the given grammar. [04]

E→ E + T | T

T→ T * F | F

F→ (E) | id

(c) What is Ambiguous grammar? And explain with one example of the ambiguous grammar. [04]

OR

(a) What is Operator Precedence Parser? Explain with example. [08]

(b) What is Left Most and Right Most derivation? Explain with example. [04]

(c) Explain Panic mode and Phase level Recovery in detail. [04]

Question: 4.

(a) Solve this grammar using SLR (1). [08]
E→T + E
E→T
T→i

(b) Difference between Compiler and Interpreter. [04]

(c) Explain Cousins of compiler. [04]

OR

(a) Give the name of all Storage Allocation Strategies and explain in detail. [08]

(b) Difference between Static Memory Allocation and Dynamic Memory Allocation. [04]

(c) Find First and Follow of given Grammar. [04]
A→ iBf | xy | ϵ
B→ zAm | ϵ

Question: 5.

(a) Explain Code Optimization technique in detail with example. [08]

(b) Explain Top Down and Bottom Up parsing in Brief. [04]

(c) What is Peephole Optimization and explain it. [04]

OR

(a) For the given example solve with every technique of the three address code generation. z := x * - y + x * - y. [08]

(b) Explain what is DAG? Draw DAG for [(a*b) + (a*b)] – [(c*d) + (c*d)]. [04]

(c) Draw Transition diagram for relational operator. [04]

Question: 6.

(a) What is Activation Record? Explain in brief. [08]

(b) Give name of Parameter Passing Technique , and explain any 2. [04]

(c) What is Symbol Table? Why we use Symbol Table. [04]

OR

(a) Write the Issues in Design of Code Generator. [08]

(b) Explain Global Data Flow Analysis. [04]

(c) Draw RE to Epsilon NFA using Thompson's Method. a (a | b)* [04]

---Best of Luck---

Que. Paper weight-age as per Bloom's Taxonomy

No.	Que. Level	% of weight-age	
		% of weight -age	Que. No.
1	Remember/Knowledge	30	1(b), 2(a), 6(a), 6(a-or), 5(c-or), 5(c)
2	Understand	14	1(a), 3(c-or), 4(c-or), 6(b), 6(b-or), 4(a-or)
3	Apply	16	3(b), 3(b-or) 3(c), 3(a-or), , 5(a-or), 5(a)
4	Analyze	16	2(b), 2(b-or), 4(b), 4(b-or)
5	Evaluate	12	3(a), 5(b), 5(b-or), 6(c-or)
6	Higher order Thinking	12	4(a), 4(c), 6(c)

GRAPH: