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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)**B.E / B. Tech (Full Time) END SEMESTER EXAMINATIONS – NOV/ DEC 2020**

Department of Computer Science & Engineering

Fifth Semester

CS6109 – Compiler Design

(Regulation 2018 - RUSA)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART- A (10 x 2 = 20 Marks)

Q.No	Questions
1.	List out the alphabets and language of $(a/b)^*(a/b/c)$.
2.	Differentiate the functionalities of linker and loader.
3.	Define CFG to recognize palindromes.
4.	Derive $(a+b*c)$ with right most derivation from the given grammar, $E \rightarrow E+E / E*E / (E)/a/b/c$
5.	What is error recovery routine?
6.	Write short notes on Parser Generator. yacc.
7.	Write Syntax directed translation with inherited attributes for type declaration statements.
8.	Derive Quadruple form of Three-address code for $a=b+(-c) *d$
9.	What is leader?
10.	Write short notes on symbol table..

PART- B (8 x 8 = 64 Marks)**(Answer any 8 questions)**

Q.No	Questions
11	Construct the NFA- ϵ for the following regular expression $(0/1)^*011$ and convert into DFA and minimize the DFA. Valid 0011 and 11 sentences.
12	Construct the DFA to recognize even number of 0s and even number of 1s. Minimize the DFA. Validate 0101 and 01011 sentences.
13	Construct LL(1) parsing table after pre-processing the given grammar $E \rightarrow E+T/T, T \rightarrow T*F/F, F \rightarrow (E) / id$. Validate $id+id*id$ and $id ++id$
14	Construct SLR parsing table the given grammar $E \rightarrow E+T/T, T \rightarrow T*F/F, F \rightarrow (E) / id$. Validate $id+id*id$ and $id ++id$
15	Construct CLR parsing table for $S \rightarrow L=R, S \rightarrow R, L \rightarrow *R, L \rightarrow id, R \rightarrow L$ and validate $id=*id$ and $id**id$
16	Construct LALR parsing table for $S \rightarrow L=R, S \rightarrow R, L \rightarrow *R, L \rightarrow id, R \rightarrow L$ and validate $id=*id$ and $id**id$
17	a) Write down the required syntax directed translation schemes for the following code segment and construct the annotate parse tree along with generation of the corresponding three address code. $a[i][j][k] = c*a[i][j][j]$
18	b) Write down the required syntax directed translation schemes for the following code segment and construct the annotate parse tree along with generation of the corresponding three address code. <pre> i=sum=0; while (i<=10) if (i%2==0) sum=sum+i </pre>
19	Discuss loop optimization with suitable example.

20	Explain peephole optimization.
21	Discuss - Dynamic programming based code generation with appropriate example.
22	Discuss register allocation with suitable example.

PART- C (2 x 8 = 16 Marks)

Q.No	Questions
23	Discuss Simple code generation procedure with suitable example.
24	Explain - heap management with proper example