PAPER ID-310617

Roll No: | | | | | | | | | | | | | |

MCA
(SEM III) THEORY EXAMINATION 2024-25
COMPILER DESIGN

TIME: 3 HRS **M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	CO	Level
a.	What do you mean by Cross Compiler?	1	K1
b.	Define Bootstraping	1	K1
c.	Describe the concepts of Predictive Parsing	2	K2
d.	List down the action performed by shift reduce parser.	2	K1
e.	Demonstrate an example of parse tree and syntax tree.	3	K3
f.	Translate the arithmetic expression a* -(b+c) into 3-address code	3	K3
g.	Define a postfix notation.	4	K1
h.	What are the various advantage of heap storage allocation?	4	K2
i.	Write down evolution in grammar for declaring a variable with its semantic actions?	5	K3
j.	Discuss various issues in code generation	5	K4

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a.	Define regular expression. Write about the identity rules for regular expressions.	1	K2

b.	Examine the output of lexical analyzer for the following program.
	int max (x, y)
	int x, y;
	/* this program find out the maximum of two numbers*/
	{
	return (x > y? x: y);
	}
		2	K3

c.	Explain reducible and non-reducible flow graphs with example.	3	K2
d.	How registers are allocated in code generation? Differentiate among source code, intermediate code and object code	4	K2
e.	Explain in detail inter procedural optimization.	5	K2

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a.	For the Regular expression (a/b)*a(a/b). Draw the NFA. Obtain DFA form NFA	1	K3
b.	Describe the role of lexical analyzer in a compiler.	1	K3

4. Attempt any *one* part of the following: **10 x 1 = 10**

a.	Define left factoring and left recursion of grammar. Is the following grammar is left recursive – E→E+E | E*E | a | b	2	K3
b.	Construct parse tree for the following grammar and make operator precedence table.	2	K3

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	E → E+T | T T → T*F | F F → id		

5. Attempt any *one* part of the following: 10 x 1 = 10

a.	What is symbol table? Explain in detail. Explain the use of symbol table.	3	K4
b.	Differentiate between synthesized and inherited attributes with suitable example	3	K4

6. Attempt any *one* part of the following: 10 x 1 = 10

a.	Classify three types of implementations of three-address statements	4	K4
b.	What are lexical phase error and syntactic error? Also suggest methods for recovery of errors.	4	K4

7. Attempt any *one* part of the following: 10 x 1 = 10

a.	What are the various advantages of DAG? Discuss peephole optimization.	5	K2
b.	Discuss different issues to design code generator. Explain in detail.	5	K2