Q. Code: 291171

Reg. No. | | | | | | | | | | | | | |

B.E./ B. TECH.DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

IT18602 – AUTOMATA AND COMPILER DESIGN

(Information Technology)

(Regulation 2018 / 2018A)

TIME:3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Demonstrate the various types of language processing system and its necessity in use.	**3**
CO 2	Analyze the various techniques and design components of compiler.	**4**
CO 3	Integrate various formalisms and tools for implementing phases of compiler.	**5**
CO 4	Choose the suitable optimization technique and storage structure for language constructs.	**4**
CO 5	Generate the target code by applying suitable error recovery strategies.	**5**

PART- A(10x2=20Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Construct a regular expression for a language that starts with a and ends with b and write the regular language.	**1**	**3**
2.	What are the two parts of compilation.	**1**	**2**
3.	What are the different error recovery strategies that a parser can employ to recover from a syntactic error?	**2**	**2**
4.	How to left factor the grammar? Give Example.	**2**	**3**
5.	Differentiate synthesized and inherited attributes with example.	**3**	**4**
6.	Describe the functionalities of a type checker.	**3**	**2**
7.	Analyze the statement “Copy propagation Leads to Dead code”.	**4**	**4**
8.	Predict when dangling references occur?	**4**	**3**
9.	What are the properties of optimizing compiler?	**5**	**2**
10.	Construct the object code sequence for t=a+b produced by a code generator.	**5**	**3**

PART- B (5x 14=70Marks)

			Marks	CO	RBT LEVEL
11.(a)	**(i)**	Construct NFA with its equivalent DFA for the regular expression (0|1)*010(0|1)*.	**(7)**	**1**	**3**
	(ii)	Construct NFA with its transition table for the regular expression (a|b)*abc(a|b)* and parse the string babca.	**(7)**		

(OR)

(b)		Construct NFA for the regular expression (a+b)*baa using thompson method and convert to DFA using subset construction method.	**(14)**	**1**	**3**
12. (a)		Construct the output at all phases of the compiler for the following fragment of C code: float i, j; i = i*70+j+2; and also explain the phases of compiler.	**(14)**	**2**	**3**
		(OR)			
(b)		Construct the non-recursive predictive parser for the grammar S→Aa| bAc|Bc|bBa, A→d, B→d and also check the acceptance of input sting bdc.	**(14)**	**2**	**3**
13.(a)	**(i)**	Write Syntax Directed Definition, semantic rules and construct the annotated parse tree for the expression: double c,d .	**(6)**	**3**	**4**
	(ii)	Generate the intermediate code for the expression (a–b)*(c+d) +(a–b) +b.	**(8)**		
		(OR)			
(b)		Examine the process of generating three address code for control flow instructions and translate the statement if(a<50||a>100 & a!=b) a=0;	**(14)**	**3**	**4**
14. (a)		Consider the pseudo code for quick sort and apply the various principal sources of optimization techniques.	**(14)**	**4**	**3**
		(OR)			
(b)	**(i)**	Discuss the structure of activation record and explain the contents of activation record.	**(7)**	**4**	**3**
	(ii)	Construct a DAG and write the sequence of instructions for the expression a+a*(b–c)+(b–c)*d.	**(7)**	**4**	**3**
15. (a)		Explain the various issues in the design of code generator with example.	**(14)**	**5**	**2**
		(OR)			
(b)	**(i)**	Explain the characteristics of peephole optimization with examples.	**(7)**	**5**	**2**
	(ii)	Write the code generation algorithm. Generate a code sequence for the assignment d=(a-b)+(a-c)+(a-c).	**(7)**	**5**	**2**

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Create a Lex program that recognizes the SQL keywords SELECT, FROM, and WHERE regardless of their case, along with identifiers that start with a letter and can consist of letters and digits.	**(10)**	**3**	**5**

****