DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. **Branch: Computer Engineering** **Semester: VI**

Subject Code & Name: BTCOC601 - Compiler Design

Max Marks: 60 **Date: 11/08/2022** **Duration: 3.45 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Define Compiler? State some commonly used compiler-construction tools.	Remembering	**6**
B)	Explain how the assignment statement ***"position = initial + rate * 60"*** is grouped into the lexemes and mapped into the tokens passed on the syntax analyzer.	Understanding, Applying	**6**
C)	What are the contents of a symbol table? Explain in detail the symbol table organization for Block-Structured languages.	Remembering, Analyzing	**6**
Q.2	**Solve Any Two of the following.**		
A)	Explain the concept of the transition diagram with an example transition diagram of ***relop*.** Write important conventions about the transition diagram.	Remembering, Applying	**6**
B)	In lexical analysis, explain for example how tokens, patterns, and lexemes are related.	Remembering, Analyzing	**6**
C)	Explain the structure of the lexical-analyzer generator. Show the construction of an NFA from a Lex program.	Understanding, Applying	**6**
Q. 3	**Solve Any Two of the following.**		
A)	How Left Recursion is eliminated? Explain with algorithm and example.	Remembering, Analyze	**6**
B)	What is meant by shift-reduce parsing? Explain the configuration of a shift-reduce parser on input **id1*id2.**	Remembering, Applying	**6**
C)	Construct a Predictive parsing table for the Grammar **E ->E+T | T, T->T*F | F, F->(E) | id.**	Applying	**6**
Q.4	**Solve Any Two of the following.**		
A)	Differentiate between Synthesized and Inherited attributes with suitable examples. Also, define what is meant by annotated parse tree.	Analyze	**6**
B)	Explain constructing syntax trees for simple expressions involving only binary operators + and -. State the use of *Leaf* and *Node* in this syntax tree.	Understanding, Applying	**6**
C)	Explain in brief about Type checking and Type Conversion.	Remembering, Analyze	**6**
Q. 5	**Solve Any Two of the following.**		
A)	What is the purpose of code optimization? Explain the DAG representation of basic blocks with examples.	Remembering, Understand	**6**
B)	Explain the Code generation algorithm with three-address instructions. State the four principal uses of registers.	Understanding, Applying	**6**
C)	What is a Flow Graph? Explain how a given program can be converted into a Flow graph?	Understanding, Analyze	**6**

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