Seat No.: ________ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2170701 **Date: 23/11/2019**

Subject Name: Compiler Design

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

MARKS

Q.1 **(a)** Explain tokens, lexemes, Pattern with example. **03**

(b) Distinguish between ambiguous and unambiguous grammar? **04**

(c) Explain the analysis synthesis model of compilation. List the factors that affect the design of compiler. Also List major functions done by compiler. **07**

Q.2 **(a)** Write a regular definition for **03**

1. The Language of all strings that do not end with 01.
2. All strings of digit that contain no leading 0's.

(b) Explain backtracking with example. **04**

(c) Construct a DFA for a given regular expression (a|b)*abb. **07**

OR

(c) Construct DFA without constructing NFA for following regular expression: a*b*a(a | b)b*a#. **07**

Q.3 **(a)** Perform the Left factoring of following Grammar. **03**

S → iEtS / iEtSeS / a E → b

(b) Write a brief note on input buffering techniques. **04**

(c) Explain Recursive Descent Parser with example. **07**

OR

Q.3 **(a)** Explain the following: **03**

1. Handle
2. Forward Reference
3. Conflicts in LR Parsing

(b) Explain non-recursive predictive parsers. Draw the block diagram of it. **04**

(c) Generate the SLR parsing table for the following Grammar. **07**

S→Aa | bAc | bBa
A→d
B→d

Q.4 **(a)** Define attributed grammar? Which phase of the compilation process does it facilitate? Explain with example. **03**

(b) Explain Stack Allocation and Activation Record Organization in brief. **04**

(c) Write down steps to set precedence relationship for Operator Precedence Grammar. Design precedence table for: **07**

E→E+E | E*E | E^E | id.

OR

Q.4 **(a)** Construct a DAG for (a+b)* (a+b+c). **03**

(b) Explain Error Recovery Strategies in Compiler in brief. **04**

(c) Show syntax directed definition for simple desk calculator. Also show annotated parse tree for 3*5+4n, where n indicates newline. **07**

Q.5 **(a)** Differentiate: static v/s dynamic memory allocations. **03**

(b) Discuss symbol table management in detail. **04**

(c) Translate following arithmetic expression (a * b) + (c + d) - (a + b) into **07**
1] Quadruples
2] Triple
3] Indirect Triple

OR

Q.5 **(a)** Explain any three code optimization techniques with example. **03**
(b) Explain various parameter passing methods. **04**
(c) Explain various issues in design of code generator. **07**

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