Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) EXAMINATION – SUMMER 2021

Subject Code:170701 Date:06/08/2021

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.**

Q.1 **(a)** What is Compiler? Explain working of all the phases of compiler with a sample string as input. **07**

(b) Explain peephole code optimization in detail with examples. **07**

Q.2 **(a)** Explain Input Buffering in detail with example. Also explain importance of sentinel character. **07**

(b) Draw DFA for given expression- aa*ab*c# **07**

OR

(b) Prove give regular expressions are equal by generating their optimized DFAs. **07**

1) (a | b)* 2) (a* | b*)*

Q.3 **(a)** Explain difference between ambiguous and unambiguous grammar with example in detail. Write unambiguous grammar for desk calculator. **07**

(b) Draw LL(1) parsing table for the following grammar. **07**

S → iEtSS' | a
S' → eS | €
E → b

OR

Q.3 **(a)** Explain rules to eliminate left recursion with example. Also explain left factoring in detail with example. **07**

(b) Design predictive parsing table for following grammar. **07**

E → E+T
E → T
T → T*F
T → F
F → id

Q.4 **(a)** Check whether given grammar is Valid LR(0) grammar or not. **07**

E → E+T
E → T
T → T*F
T → F
F → id

(b) Write SDD for desk calculator grammar. **07**

OR

Q.4 **(a)** Write Translation scheme for desk calculator grammar. **07**

(b) Check whether given grammar is valid LALR grammar or not. **07**

S → L = R | R
L → * R | id
R → L

Q.5 **(a)** Explain error recovery techniques in detail with examples. **07**

(b) Explain following in detail. **07**

1) Quadruple 2) Triple 3) Indirect Triple

OR

Q.5 **(a)** Explain Code Generation algorithm in detail. **07**

(b) Explain various storage allocation techniques in detail. **07**

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