

GUJARAT TECHNOLOGICAL UNIVERSITY
BE IV - SEMESTER VII (NEW SYLLABUS) EXAMINATION- SUMMER - 2018

Subject Code: 2170701**Date: 28/04/2018****Subject Name: Compiler Design****Time: 02:30 PM TO 05:00 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) Define cross compiler, token and handle. **03**
 (b) Draw transition diagram for relational operators. **04**
 (c) Explain phases of compiler with example. **07**

- Q.2** (a) Explain panic mode recovery strategy. **03**
 (b) Write a short note on input buffering method. **04**
 (c) Explain subset construction method with example. **07**

OR

- (c) Draw DFA for the following regular expression using firstpos(), lastpos() and followpos() functions. **07**

 $(a | b)^* a$

- Q.3** (a) What is operator grammar? Check the following grammar is operator or not. Justify your answer. **03**

 $E \rightarrow EOE$ $E \rightarrow id$ $O \rightarrow * | + | -$

- (b) Check the following grammar is left recursive or not. Justify your answer. If Left recursive then make grammar as non-left recursive. **04**

 $S \rightarrow (L) | a$ $L \rightarrow L, S | S$

- (c) Construct CLR parsing table for the following grammar. **07**

 $S \rightarrow CC$ $C \rightarrow cC | d$ **OR**

- Q.3** (a) Consider the following grammar and construct the corresponding left most and right most derivations for the sentence abab. **03**

 $S \rightarrow aSbS | bSaS | \epsilon$

- (b) Find out FIRST and FOLLOW for the following grammar. **04**

 $S \rightarrow 1AB | \epsilon$ $A \rightarrow 1AC | 0C$ $B \rightarrow 0S$ $C \rightarrow 1$

- (c) Explain SLR parsing method with example. **07**

- Q.4** (a) What is symbol table? For what purpose, compiler uses symbol table? **03**

- (b) Write a short note on activation record. **04**

- (c) Write syntax directed definition for simple desk calculator. Using this definition, draw annotated parse tree for $3*5+4n$. **07**

OR

- Q.4** (a) Explain algebraic simplifications and flow of control optimization characteristics of peephole optimization. **03**
- (b) Explain Quadruples and Triples form of three address code with example. **04**
- (c) What is inherited attribute? Write syntax directed definition with inherited attributes for type declaration for list of identifiers. **07**
- Q.5** (a) Draw a DAG for expression: $a + a * (b - c) + (b - c) * d$. **03**
- (b) Compare: Static v/s Dynamic Memory Allocation. **04**
- (c) Explain any three code optimization methods. **07**
- OR**
- Q.5** (a) Write difference(s) between stack and heap memory allocation. **03**
- (b) Explain any two methods of parameter passing. **04**
- (c) Explain various issues in design of code generator. **07**

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