

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014

Subject Code: 170701

Date: 22-05-2014

Subject Name: Compiler Design

Time: 02:30 pm - 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) What is the pass of a compiler? Explain how the single and multi-pass compilers work. **07**
(b) Draw Deterministic Finite Automata for : **07**
1. $(0+1)^*101(0+1)^*$
2. $10(0+1)^*1$
- Q.2** (a) List out phases of a compiler. Write a brief note on Lexical Analyzer. **06**
(b) Implement the following grammar using Table Driven parser and check whether it is LL(1) or not. $S \rightarrow aBDh$, $B \rightarrow cC$, $C \rightarrow bC / \wedge$, $D \rightarrow EF$, $E \rightarrow g / \wedge$, $F \rightarrow f / \wedge$ **08**
- OR**
- (b) Implement the following grammar using Recursive Descent Parser. **08**
 $S \rightarrow Aa \mid bAc \mid bBa$, $A \rightarrow d$, $B \rightarrow d$
- Q.3** (a) What is bottom-up parsing? Discuss Shift Reduce parsing technique in brief. What is a handle? **08**
(b) Write a syntax directed definition of a simple desk calculator and draw an annotated parse tree for $4*3 + 2*5$. **06**
- OR**
- Q.3** (a) Define an Operator Precedence Grammar. Also write down the rules to find relationship between each pair of terminal symbols. **08**
(b) Convert the following into quadruple, triple and indirect triple forms : $-(a+b)*(c-d)$. **06**
- Q.4** (a) Construct SLR parsing table for the following grammar : **10**
 $E \rightarrow E+T$ $E \rightarrow T$ $T \rightarrow T*F$ $T \rightarrow F$ $F \rightarrow (E)$ $F \rightarrow a$
- (b) Differentiate Synthesized and Inherited attributes. **04**
- OR**
- Q.4** (a) Error Recovery strategies of compiler. **07**
(b) What is the use of a symbol table? How the identifiers are stored in the symbol table? **07**
- Q.5** (a) Write a note on peephole optimization. **07**
(b) Write a note on static and dynamic memory allocation. What do you mean by dangling reference? **07**
- OR**
- Q.5** (a) What is an activation record? Explain how they are used to access various local and global variables. **07**
(b) Write a brief note on input buffering techniques. **07**
