Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2170701 **Date: 29/04/2017**

Subject Name: Complier 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.**

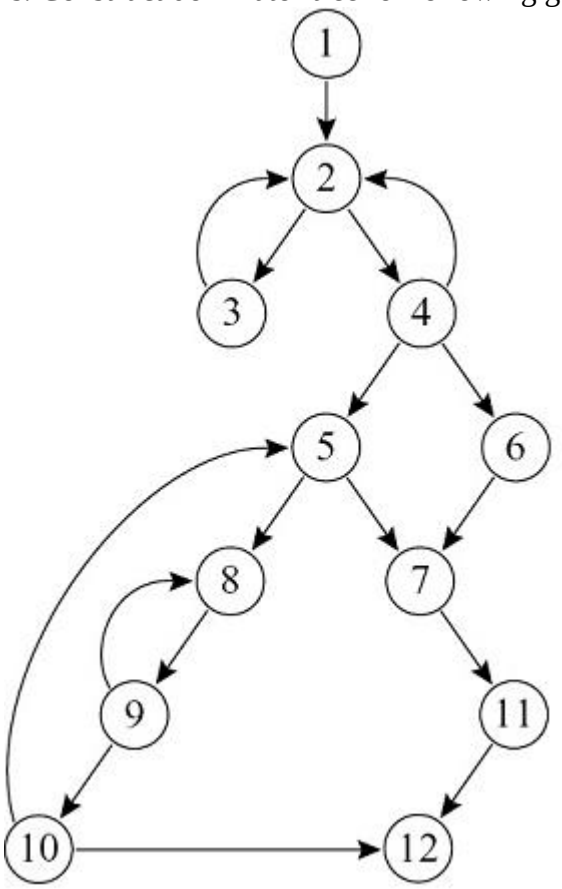
Q.1	**(a)**	Explain Semantic analysis and Syntax analysis phases of compiler with suitable example. Also explain the errors generated by these two phases.	**07**
	(b)	Construct the NFA using thompson's notation for following regular expression and then convert it to DFA. (a / b)* ab#	**07**
Q.2	**(a)**	Check following grammar is LL (1) or not? S -> aB | € B -> bC | € C -> cS | €	**07**
	(b)	What is left factoring and left recursion? Explain it with suitable example.	**07**
		OR	
	(b)	Construct CLR parsing table for following grammar. S -> aSA | € A -> bS | c	**07**
Q.3	**(a)**	Show that following grammar is not a SLR (1) grammar. S -> AaBa | BbBa A -> € B -> €	**07**
	(b)	Develop a syntax directed definition for following grammar. E -> TE' E' -> +TE' | € T -> (E) T -> id	**07**
		OR	
Q.3	**(a)**	Write a grammar to declare variables with data type int or float or char. Also develop a syntax directed definition for that. Draw the dependency graph for same.	**07**
	(b)	Define operator precedence grammar. Construct precedence matrix and precedence graph for arithmetic grammar as shown below: E -> E + T | T T -> T * F | F F -> (E) | id	**07**
Q.4	**(a)**	Explain Activation record and Activation tree in brief.	**07**
	(b)	Explain Quadruple, triple, and indirect triple with suitable example.	**07**
		OR	
Q.4	**(a)**	Write a note on peephole optimization.	**07**
	(b)	Write a short note on symbol table management.	**07**
Q.5	**(a)**	Define a following: Basic block, Constant folding, Natural loop, Handle	**07**

(b) Construct DAG for a + a * (b- c) + (b – c) * d. also generate three address code for same. **07**

OR

Q.5 **(a)** Discuss the issues in the design of code generation. **07**

(b) Define dominators. Construct dominator tree for following graph. **07**



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