DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VI [IT]
SUBJECT: (IT608) LANGAUGE TRANSLATOR

Examination	**:First Sessional**	**Seat No.**	**: _____**
Date	**: 07/01/2013**	**Day**	**: Monday**
Time	**: 12.30 to 1.30**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1	**Do as directed.**		
	(a)	Represent the following code in Intermediate code form .Show **at least three** different IC forms: " a= b/ -c + b/ -c"	**[3]**
	(b)	In _____type of Intermediate code representation, common sub expression is been shown only once in a tree while in _____type of Intermediate code representation, explicit names are given to each computation result. [syntax tree/ DAG/ 3- address code/postfix form]	**[1]**
	(c)	Justify:-"With reference to 3-address code representation methods, Utility of indirect triples is same as that of quadruples"	**[2]**
	(d)	If you were to design a compiler, would you provide optimization phase? Why?	**[2]**
	(e)	Justify: Automated Compiler optimizer can be better than human optimizer.	**[2]**
	(f)	For following program, which phases of "C++" compiler would generate errors? main () {int i , j; float char k; i="integer"; if(i = integer){ i++ } }	**[2]**
Q.2	Attempt ***Any Two*** from the following questions.		**[12]**
	(a)	Consider following program, in block structured pseudo –language with lexical scoping and nesting of procedures permitted.	
		Procedure main; variable x; Procedure p1; variable y ; Call p2; End P1; Procedure p2; Variable z; Procedure p21; Variable m; Call p1; End p21; Call p21; End p2; Call p1; Call p2; End main.	
		Consider the calling chain : 1) main called p1,p1 called p2,p2 called p21,p21 called p1 2) main called p2, p2 called p1. Show contents of runtime memory, with clear details if access links used.	
	(b)	Consider the following pseudo-code (all data items are of type integer):	
		Procedure P (a, b, c); a:=2; c:=a+b; end {P} begin x:=1; y:=5; z:=100; P(x,x*y,z); Write ('x=',x,z=',z)	

		end:	
		Determine its output, if the parameters are passed to the procedure P by (1) Pass-by- value, (2) pass-by-reference (3) pass-by- name. Note:-*clearly show the runtime stack contents with details of activation record in each case*.	
	(c)	The following program fragment is written in a programming language that allows global variables and does not allow nested declarations of functions.	
		global int i = 100, j = 5; void P(x) { int i = 10; print(x + 10); i = 200; j = 20; print (x);} main( ) {P(i + j);}	
		(a) If the programming language uses static scoping and pass by name parameter passing mechanism, what are the values printed by the above program ? (b) If the programming language uses dynamic scoping and pass- by- value parameter passing mechanism, what are the values printed by the above program?	
Q.3	(a)	Give syntax directed definition to produce syntax tree for following language- S->id:=E E-> E1 +E2 E-> E1* E2 E->-E1 E->(E1) E->id Ex ample of statements in this language are: a=b+c ; a=(b-c)*d ; a= (b*c)-(-d)	**[6]**
	(b)	Write short note on: error response and error recovery strategies.	**[6]**
		OR	
Q.3	(a)	Give assembly code generated by a **simple code generator** for following statement x = (a+b) –((c+d)-e). Assume the target machine has 2 registers. Also list the issues in the design of code generator.	**[6]**

	(b)	Find and explain in brief optimizations possible for following program fragment.
		main()
		{
		{ int a,b,c,d;
		float x=0, y;
		for(a=0;a<y;a++)
		{
		a=b*4;
		x=25.0+5.0, y=10.0;
		a=x+y;
		b=a;
		d=b;
		}
		if(a<b) {c=x+y; b=c; }
		if(x = = 1) {x++;}
		}
		}
			[6]