



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

<b>Examination</b>	<b>:Block</b>	<b>Seat No.</b>	<b>: _____</b>
<b>Date</b>	<b>: 26 / 03 /2013</b>	<b>Day</b>	<b>: Monday</b>
<b>Time</b>	<b>: ____ to _____</b>	<b>Max. Marks</b>	<b>: 36</b>

**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) Following are features of various phases of typical compiler. Identify for each feature, its corresponding phase. [2]
- (i) Generate relocatable /non relocatable machine code or assembly code.
  - (ii) Attempts to improve input code, so efficient machine code is generated.
  - (iii) Impose a hierarchical tree structure on token stream.
  - (iv) Read characters in source program and group them into stream of tokens.
- Hint:-possible phases are lexical analyzer,syntax analyzer,semantic analyzer,intermediatecode generator,code optimizer,code generator.
- (b) Give syntax tree/DAG (directed acyclic graph) for following statement. [2]
- $$x=(b+c)/(b/-c)*(b+c)$$
- (c) In \_\_\_\_\_type of storage allocation, nested procedures not possible, but \_\_\_\_\_ type of storage it is possible.[static/stack/queue] [2]
- (d) In \_\_\_\_\_type of Intermediate code, explicit names are given to each computation result. [ syntax tree/ parse tree/ 3- address code/postfix form] [1]
- (e) For the following 'C' fragment, identify and list the lexemes that make up tokens. [2]
- ```
#define<stdio.h>
main () { int m, x; /*a simple program for finding*\max of two*/numbers*/
printf ("enter two numbers"); m=23; x=4.54; fi(x>m)
printf ("max is y"); }
```
- (f) Consider following four items of run-time information stored in a frame. For each item, identify whether its value is set before the procedure is called, during procedure execution, or right before procedure return. [3]
- i) local variables ii) return value iii) control link

**Q.2**

- (a) Verify if following grammar SLR? [6]
- $$S \rightarrow XYa\# \quad X \rightarrow a \mid Yb \quad Y \rightarrow \wedge \mid c$$
- Note:- $\wedge$  indicates null production

- (b) Give the syntax directed definition for checking types of expression. Assume there are two types-real and integer.,with integers converted to reals when necessary. [6]

Ex- If expression is "a+b", and type of 'a' is 'integer', while type of 'b' is real, then type of result would be real.

- Q.3**
- (a) Write short note on- "machine independent Optimization techniques" [6]
- (b) Write short note on-"block structured symbol table organization techniques" [6]