Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M.E Sem-II Remedial Examination December 2010**

## Subject code: 720202
## Subject Name: Design of Language Processors

**Date: 20 /12 /2010** **Time: 02.30 pm – 05.00 pm**
**Total Marks: 60**

## Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

**Q.1** **(a)** Identify errors in following C segment. Name the phase of a compiler detecting the errors. Justify your answers. **06**

```
void fi (int i);
int main()
{
   int j = k = 0;
   int n = 1;
   fi ( j )
   j++;
   fi(j + 2);
   fi ( &n);
   n = j * * 2;
   return ;
   j = 10;
  return 1;
}
```

**(b)** Explain first three phases and error handling of a compiler. Give appropriate examples. **06**

**Q.2** **(a)** State various possible implementations for a symbol table. Explain the most suitable implementation. **06**

**(b)** Construct NFA using Thompson's notation for following regular expression and convert it into DFA. **06**
(a * | b* )ba*#

**OR**

**(b)** Construct DFA without constructing NFA for following regular expression. **06**
((a * b* )c)*a*#

**Q.3** **(a)** Describe parse tree, syntax tree and annotated parse tree by giving example(s). **06**

**(b)** Construct syntax tree and DAG for following: **06**
a = b * c + b * c * d – c * d;
Write three address codes for the same.

**OR**

**Q.3** **(a)** Explain Simple LR parser. **06**

**(b)** Explain macros and macro processors for the assembler. **06**

**Q.4** **(a)** Construct operator precedence graph & precedence table. Parse following string using operator precedence parser: **06**
$ id ^ id ^ id * id ^ id $

| | | | |
|---|---|---|---|
| | **(b)** | Write unambiguous production rules for if then else construct and parse following statement using Shift – Reduce parser:<br>if E1 then if E2 then S2 else if E3 then s3 else s4 | **06** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain primary clustering, secondary clustering and selection criteria for rehashing function. | **06** |
| | **(b)** | Explain and justify whether following types of files are relocatable and executable:<br>.obj, .com and .exe | **06** |
| **Q.5** | **(a)** | Explain tools - Lex and Yacc. | **06** |
| | **(b)** | Explain various parameter passing techniques. | **06** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain peep-hole optimization. | **06** |
| | **(b)** | Write production rules and associated semantic rules for statements like<br>int i , j , k ;<br>int * ip , l ;<br>char * c ; | **06** |

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