

III B.Tech II Semester Supplementary Examinations, April/May 2005
LANGUAGE PROCESSORS
 (Common to Computer Science & Engineering and Information
 Technology)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe the languages denoted by the following regular expressions
 - i. $(0/1)^* 0(0/1) (0/1)$
 - ii. $0^*10^*10^*10^*$
 - iii. $(00/11)^* ((01/10)(00/11)^* (01/10) (00/11)^*)^*$
 (b) Give the general format of a LFX program.
 (c) Write a lex program that copies a file, replacing each non-null segments of white space by a single blank.
2. (a) Convert the following grammar into LL(1) grammar
 $R \rightarrow R \text{ "}'R|RR|R * |(R)|a|b$
 (b) What are the advantages and disadvantages of operator precedence parsty.
3. (a) Write a syntax directed translator scheme to translate the following grammer for declaration statement

$$\begin{aligned} D &\rightarrow TL \\ T &\rightarrow \text{int} \\ T &\rightarrow \text{red} \\ L &\rightarrow LDid \\ L &\rightarrow \text{id} \end{aligned}$$
 (b) Distinguish synthesized and inherited attitudes in semantic ronters.
4. (a) How do you check the expressions in polymorphic functions? Explain through an example.
 (b) Consider the following declarations


```
type link = ↑ cell;
var   next : link;
      last : link;
      p    : ↑ cell;
      q,r  : ↑ cell;
```

 Which among the following expressions are Structurally equivalent? Which are name equivalent? Justify your answer.
 - i. link
 - ii. pointer(cell)
 - iii. pointer(link)

- iv. `pointer(record((info X integer) X (next X pointer(cell)))`
- 5. (a) What is dangling reference in storage allocation? Explain with an example.
(b) Explain hash table organization of symbol tables for block structure languages.
- 6. (a) Explain with an example the abstract machine code form of Intermediate code.
(b) Give a detailed account on loop optimisator techniques.
- 7. (a) What are dataflow equation.
(b) Explain how copy propagation can be done using dataflow equation.
- 8. (a) Define the following
 - i. Macro
 - ii. Macro expansion
 - iii. Lexical Expansion
 - iv. Semantic Expansion
- (b) What is meant by Macro definition? Explain the data structures used in a Macro Processor.
