



Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, May 2012
(2008 Scheme)
08.601 – COMPILER DESIGN (RF)

Time: 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. Write a short note on compiler writing tools.
2. Explain the use of regular expressions in compiler.
3. Define syntax and semantics of a language, with suitable examples.
4. Explain the use of symbol table.
5. Differentiate between phase and pass.
6. Explain the merits and demerits of operator precedence parser.
7. Explain left recursion elimination, with example.
8. Define handle pruning.
9. Explain global optimization.
10. Write a short note on triples and indirect triples. **(10×4= 40 Marks)**

PART – B

Module – I

11. Construct NFA from the regular expression $ab(a/b^*a)^*ab$ and convert to minimized DFA.

OR





12. a) A list structure may be defined as follows :

- i) \wedge is a (null) list structure
- ii) a is a (atom) list structure
- iii) if $l_1, l_2, l_3, \dots, l_k$ are list structures, $k \geq 1$, then $(l_1, l_2, l_3, \dots, l_k)$ is a list structure.

I) Construct a grammar for list structure.

II) Draw a parse tree for $((a, a), \wedge, (a)), a$ in the grammar constructed from part I.

b) Briefly explain the phases of a compiler.

Module – II

13. Consider the grammar for regular expressions over alphabet $\{a, b\}$.

$$E \rightarrow TE^1$$

$$E^1 \rightarrow + E / \epsilon$$

$$T \rightarrow FT^1$$

$$T^1 \rightarrow T / \epsilon$$

$$F \rightarrow PF^1$$

$$F^1 \rightarrow *F^1 / \epsilon$$

$$P \rightarrow (E) / a / b / \epsilon$$

- i) Compute FIRST and FOLLOW for each nonterminal of the above grammar.
- ii) Construct predictive parsing table for the grammar.

OR



14. Construct canonical LR parsing table for the following grammar :

$S \rightarrow CC$

$C \rightarrow cC/d$

Also explain how LALR parsing table is constructed form canonical LR parsing table.

Module – III

15. a) Write a note on loop optimization.

b) Write the syntax directed translation scheme for a desk calculator and give the parse tree (with translations) for the input $(34 - 23 + 64) * 23 / 47$.

OR

16. a) Write a note on the translation of boolean expressions.

b) Explain peephole optimization.

(3x20=60 Marks)