# NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
## Department Of Computer Science And Engineering

**First Class Test on**

# Compiler Design

Marks: 20 Course Code: CSPC62 Time: 1hr

**Instructions to the Students:** Answer all questions.

1. Construct DFA directly from the regular expression **(a|b)*ba(a|b)ab** with the help of a syntax tree. Show all steps (Syntax tree, firstpos, lastpos, followpos, and DFA). [4]

2. Write a grammar for arithmetic expressions from the following associativity and precedence of operators. Operators on the same line have the same associativity and precedence:

| Precedence Order | Operators | Associativity |
|---|---|---|
| 1 | ^ | left |
| 2 | % | right |
| 3 | * | left |
| 4 | +, - | left |

   a. Convert this grammar to LL(1) and construct a non-recursive predictive parser.
   b. Use the idea of synch to convert this parser into error-correcting mode.
   c. Show that the error-correcting parser can parse input **id*id^+id.** [1+5+2+2]

3. Take the following grammar:

$$S \rightarrow AA$$
$$A \rightarrow aA|b$$

Build an SLR parser for the grammar with the set of LR(0) items. Show the parsing actions on input **abaab.** [4+2]