Unit 5 PYQ

- 6marks

  Write short notes on : (1) Linear Bounded Automata (2) Universal Turing machine (CO5)

  Design a Turing Machine which recognize the language of Regular Expression (0 1* 0). (CO5)

  Design a TM that recognizes the languages of all strings of even length over alphabet {a,b}. (CO5)

- 10marks

  Show that the union of two recursively enumerable languages is also a recursively enumerable language and union of two recursive languages is recursive. (CO5) 10

  Define turing machine and describe its capabilities. 10
  Construct a TM for the language: $L = \{a^n b^n c^n \mid n >= 0\}$ (CO5)

  Explain Instantaneous description of Turing Machine. Design the Turing Machine for : (CO5) 10
  (i) 1's Complement of any string
  (ii) 2's Complement of any string

  Explain any two of the following : (CO5) 10
  (i) Universal Turing Machine
  (ii) Recursively Enumerable Language
  (iii) Halting Problem
  (iv) Post's Correspondence Problem

  Explain various types of Turing Machines with example (CO5) 10

  Show that the PCP with two lists x = (b, bab^3, ba) and y = (b^3, ba, a) has a solution. Give the solution sequence. (CO5) 10