

1994 Paper 13 Question 11

Computation Theory

Explain *Turing's Thesis*. [5 marks]

(a) What is meant by saying that a Turing machine has *searching* states? Show that any Turing machine computation can be effected by a machine with searching states, equivalent in the sense that the head movements are identical and the same symbols are written to the tape. [5 marks]

(b) Show that, subject to suitable encoding, any computation can be carried out by a Turing machine having only two states. [10 marks]