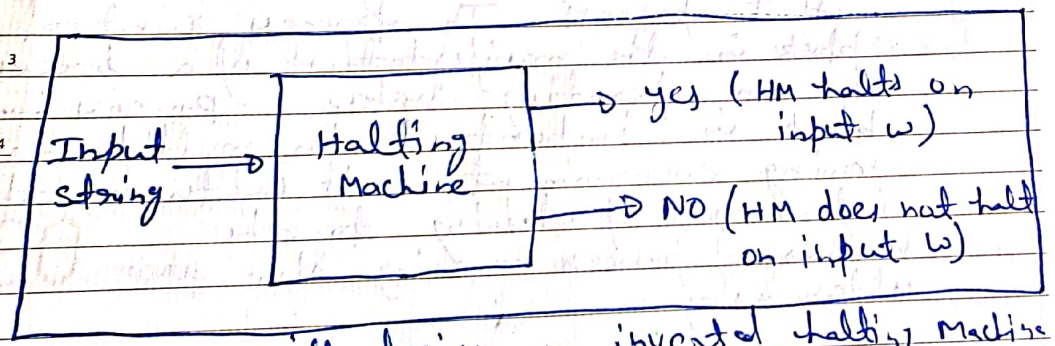
Section-2

Q2 Write short notes on the following
(i) Halting problem of TM.
(ii) Recursive language
(iii) Variants of Turing Machine.

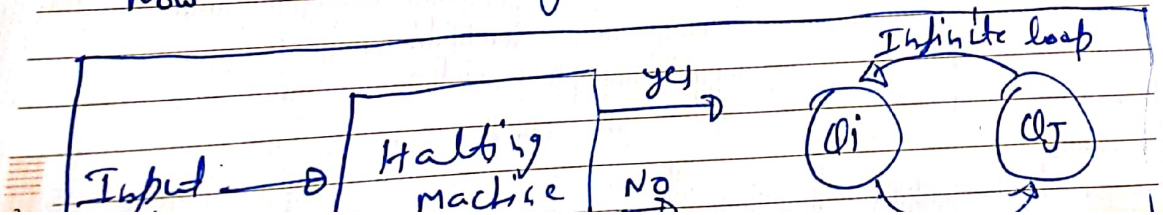
Ans ⇒ (i) Halting Problem of Turning Machine ⇒ TM

Input ⇒ A Turing machine & an input string w.

Problem ⇒ Does the Turing Machine finish computing of the string w in a finite number of steps



Now we will design an inverted halting Machine



Ans (ii) Recursive language

There are two equivalent major definitions for the concept of a recursive language :-

(i) A recursive formal language is a recursive subset in the set of all possible words over the alphabet of the language.

(ii) A recursive language is a formal language for which there exists a Turing machine that, when presented with any finite input string, halts & accepts if the string is in the language & halts & rejects otherwise.

Ans (iii) Variants of Turing Machine
(i) Multiple track turing Machine.
(ii) Two-way infinite tape turing Machine.
(iii) Multi-tape turing Machine.
(iv) Multi-tape Multi-head Turing Machine
(v) Multi-dimensional tape Turing Machine
(vi) Multi head Turing Machine
(vii) Non-deterministic Turing Machine