Q1.
Construct a Turing machine for L = {a^i b^j c^k | i*j = k
by tracing the inputs with acceptable and unacceptable test cases.

Q2.
Design a Turing Machine Transducer that takes the input
of it as an output. For example, if w=111, then the output will be 111111.

Q3.
Show that the Halting Problem is undecidable

Q4.
For a Universal Turing machine, obtain the code for <M, 1011> where
M = ({q1, q2, q3),{0,1},{0, 1, B},´,q,B {q2}) have moves
´(q3,0) = (q1,1,R); ´(q3,1) = (q2,0,R);
´(q3,B) = (q3,1,L)

Q5.
Design a Turing Machine(TM) M to prove that it can perform a multiplication operation and explain your logic for transition rules. Give the sequence of configurations that M enters when started on the indicated input string w=#110111###. The initial tape consists of 2(11) and 3 (111) and a separator 0.

Q6.
Design a Turing machine that recognizes the language L=
Illustrate the state transition diagram and concept followed to create the Turing machine. Simulate the machine on input 010#010 and verify.