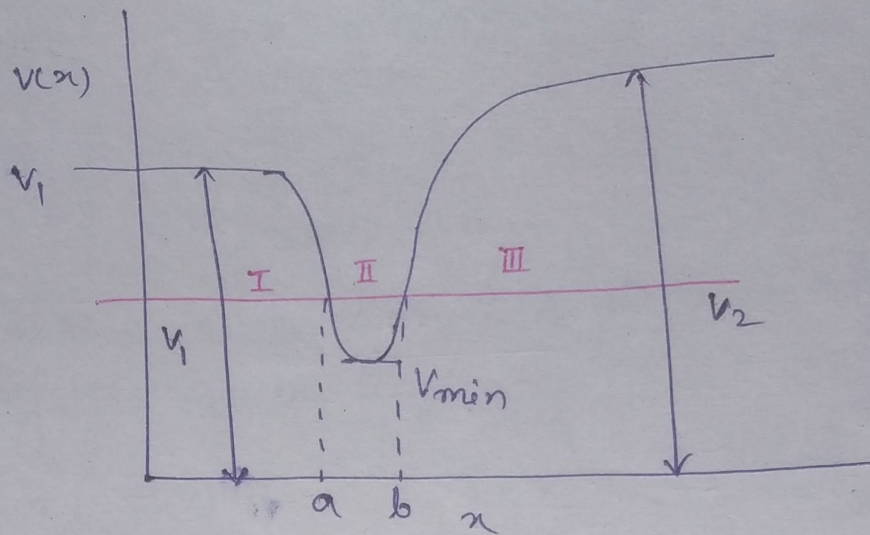


One Dimensional System



Case I

If $E < V_{\min}$, particle will not exist classically.

Case II

$$V_{\min} < E < V_1$$

I Region $x < a \rightarrow$ classically forbidden region.

III Region $x > b \rightarrow$ classically forbidden region.

II Region $a < x < b \rightarrow$ classically allowed region.

Here a and b are turning point when total energy is equal to kinetic potential energy. That's why kinetic energy is zero.

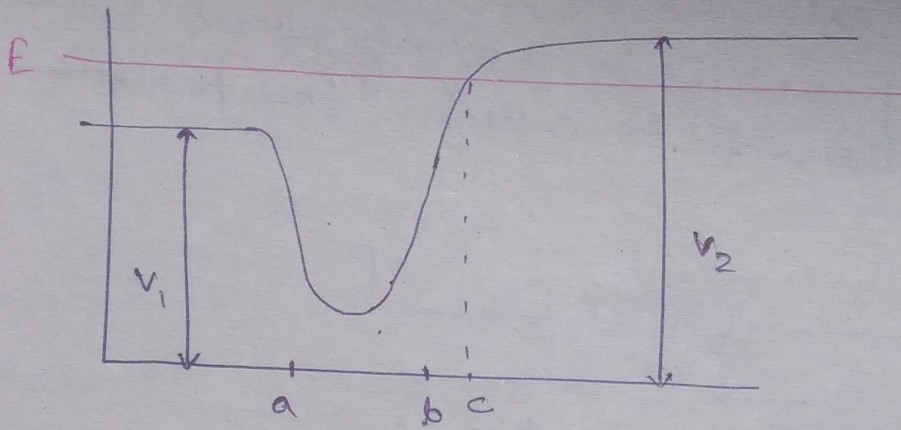
Whenever classical allowed region bounded by two turning points it is known as bound state.

When system is in bound state the energy eigen value will discrete and non-degenerate in nature.

Discrete \rightarrow There must be allowed value of energy means countable energy value.

Case II :-

$$V_1 < E < V_2$$



Total Energy greater than P.E then we have classically Allowed Region.

$$x < c$$

$x = c$ turning point.

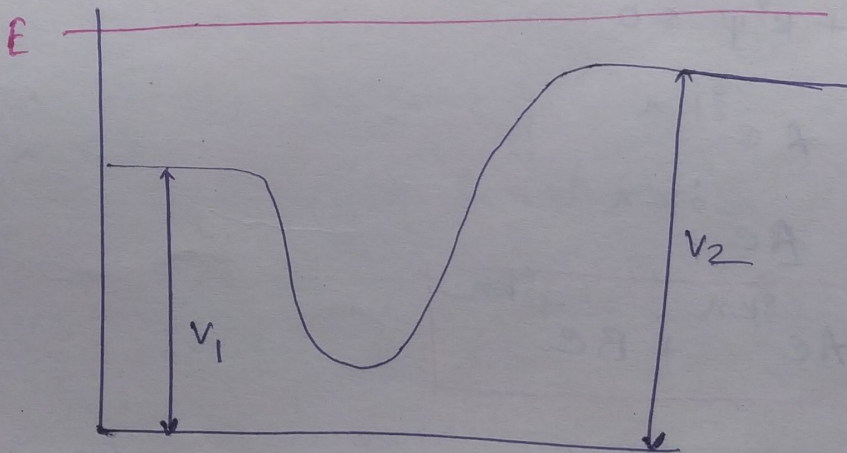
$x > c$ classically forbidden region

Classically particle

The Energy Eigen Value for this region is continuous in nature and Eigen function are non-degenerate

Case III :-

$$E > V_2$$



Here is not Any turning point so each and every point is classically allowed region.

Energy Eigen Value is continuum. The Energy

Eigen function is doubly degenerate we send particle from two direction (i.e left & right)