Introduction to RADAR

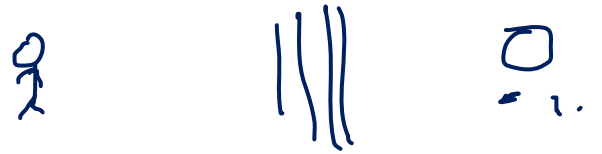
Radio waves.
Rf. (GHz).

RADAR:-RAdio Detection And Ranging

Identify.

distance

Introduction



- Radar is all about using radio waves to detect the presence of objects and to find their position.

- Radar can be designed to see through those conditions impervious to normal human vision such as…….darkness, haze, fog ,rain, and snow.

- Radar has the advantage of being able to measure the distance or range to the object.

- It is operated by radiating energy into space and detecting the echo signal reflected from an object or target.

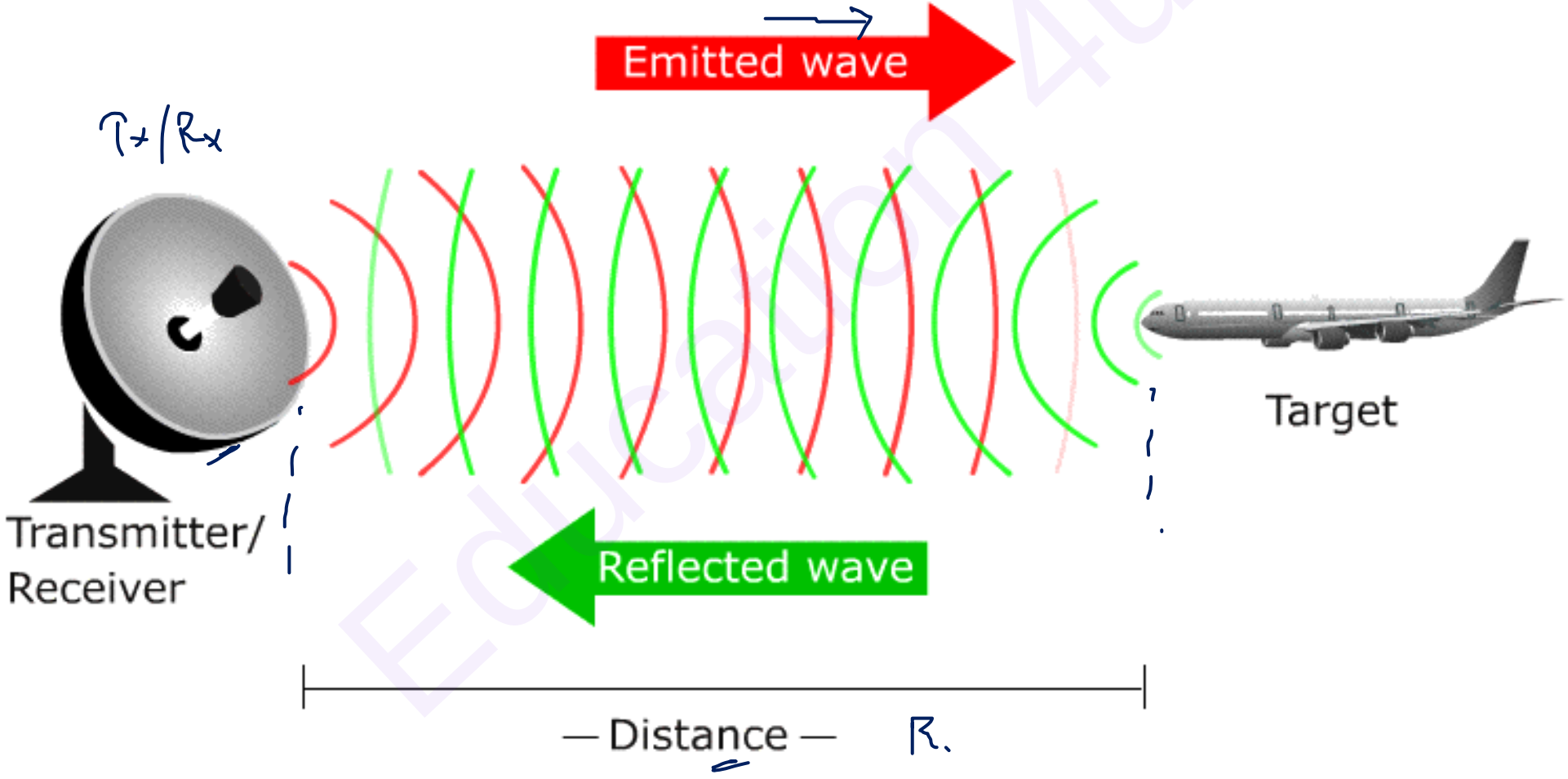
- Radar consists of a transmitting section used for emitting electromagnetic radiation generated by an oscillator.

Radar operation

Tx → high power. (1kW)

Rx → Low power. (10^{-13} W)

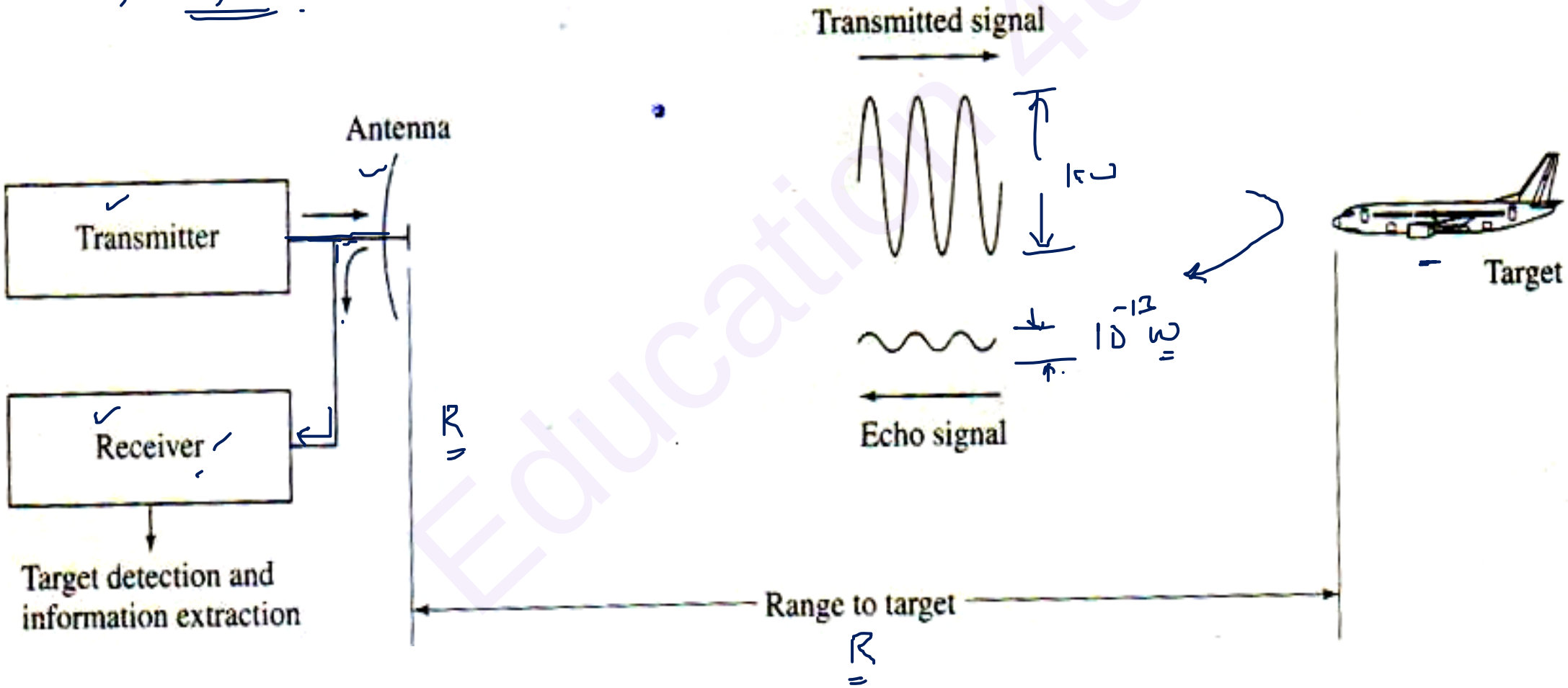
Radar operation



Basic principle of Radar

Tx, Rx, Antenna

1 Pulse RS
2. CW RS
3. FMCW RS
4 MTI
5. PDR ...



- A receiving antenna, and an energy detecting device or receiver.
- A portion of the transmitting signal is intercepted by a reflecting object and is reradiated in all directions.
- The receiving antenna collects the returned energy and delivers it to a receiver, where it is processed to detect the presence of the target and to extract it s location and relative velocity