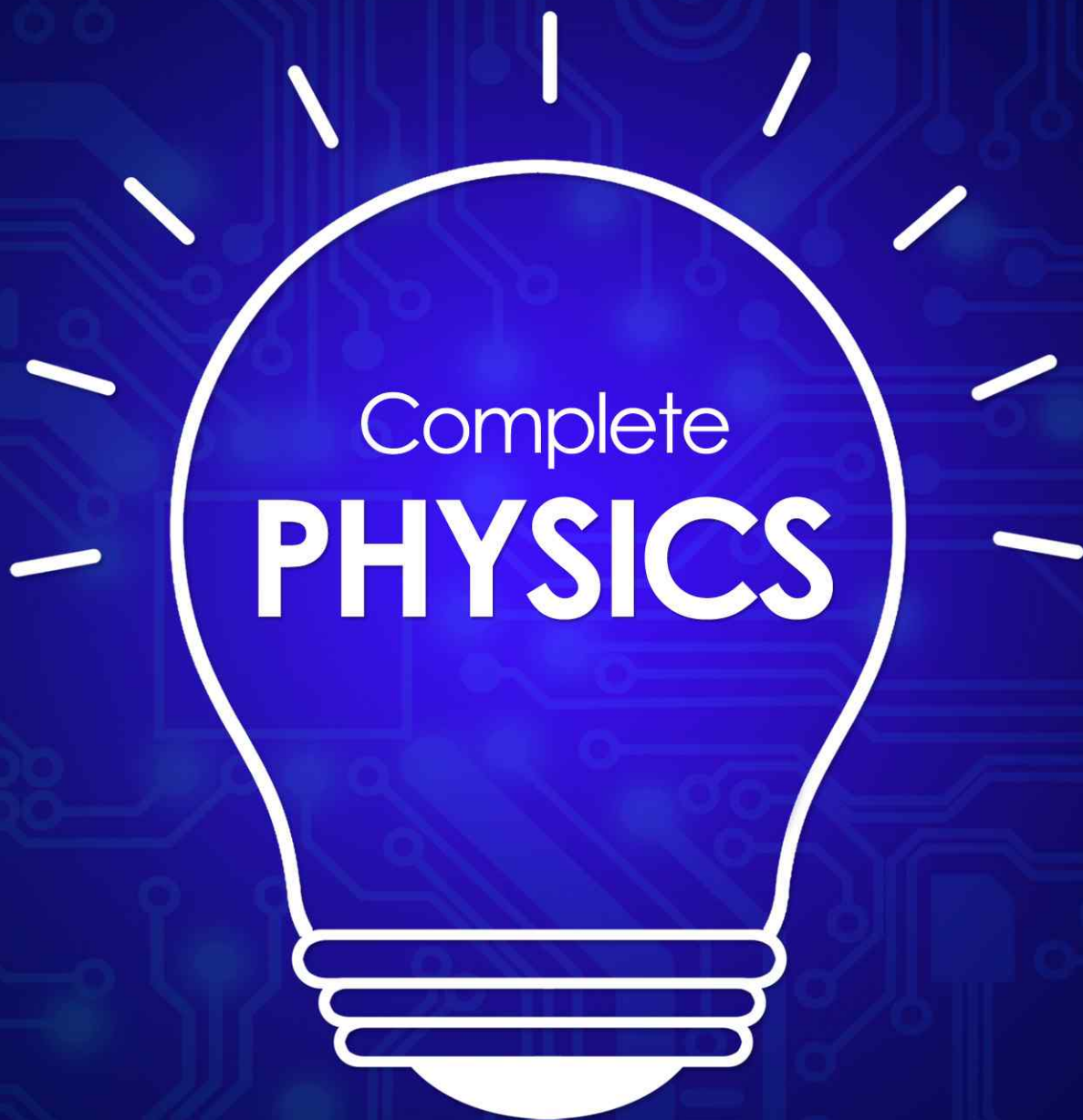




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# 15. Communication Systems

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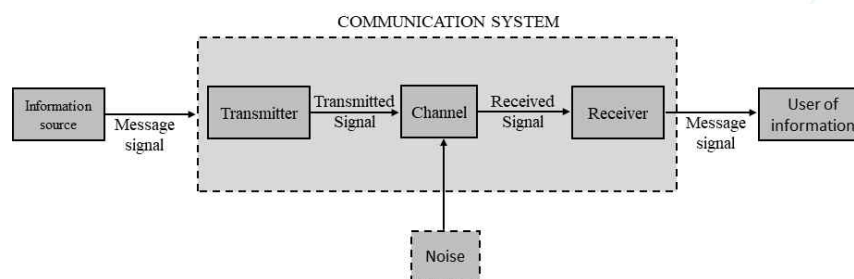


## 01. Introduction

The act of transmission and reception of information is known as communication.

## 02. Elements of a Communication System

Every communication system has three essential elements, transmitter, medium and receiver.



There are two basic modes of communication: point-to-point and broadcast.

## 03 Basic Terminology of Communication Systems

- (i) **Transducer** : Device that converts one form of energy into another.
- (ii) **Signal**: Information converted in electrical form and suitable for transmission. Signals can be either *analog* or *digital*.
- (iii) **Noise**: The unwanted signals that tend to disturb the transmission and processing of message signals
- (iv) **Transmitter**: Processes the incoming message signal so as to make it suitable for transmission through a channel and subsequent reception
- (v) **Receiver**: Extracts the desired message signals from the received signals at the channel output.
- (vi) **Attenuation**: It is the loss of strength a signal while propagating through a medium.
- (vii) **Amplification**: The process of increasing the amplitude of a signal using an electronic circuit called the amplifier.
- (viii) **Range** : Largest distance between a source and a destination up to which the signal is received with sufficient strength
- (ix) **Bandwidth**: Frequency range over which an equipment operates or the portion of the spectrum occupied by the signal.
- (x) **Modulation**: Original low frequency message/information signal cannot be transmitted to long distances because of obvious reasons. Therefore, at the transmitter, information contained in the low frequency message signal is superimposed on a high frequency wave, which acts as a carrier of the information
- (xi) **Demodulation**: The process of extraction of information from the carrier wave at the receiver
- (xii) **Repeater**: A combination of receiver and a transmitter. Communication satellite is essentially a repeater station in space.