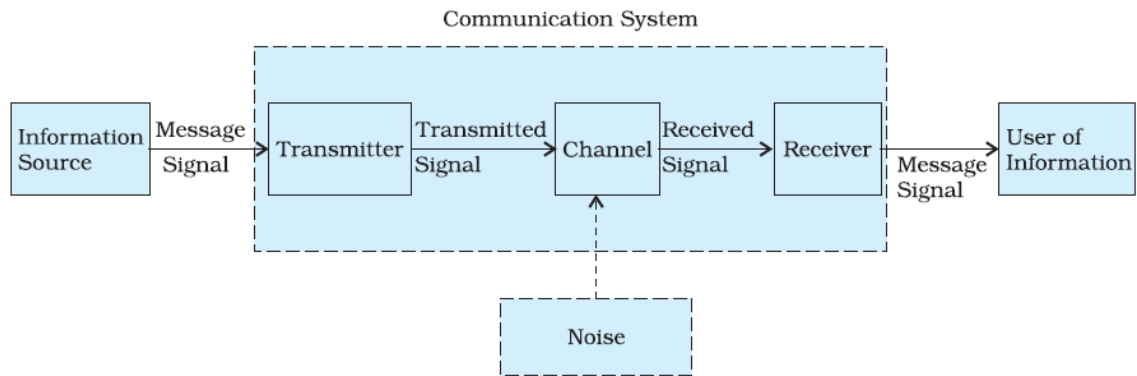


**Class XII: Physics**  
**Chapter: Communication Systems**

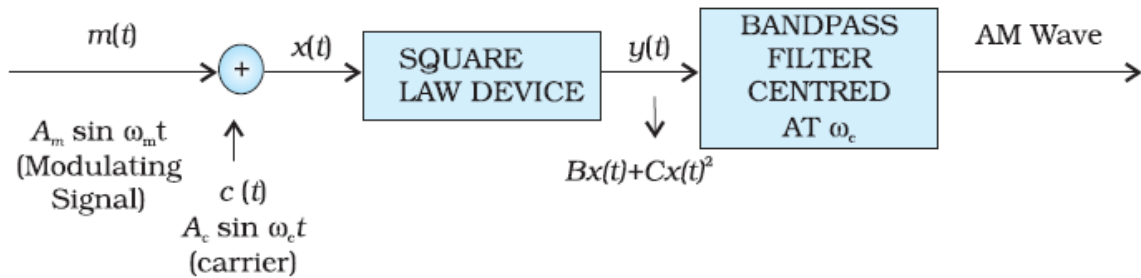
1. **Analog and Digital Mode of Transmission.** An analog message is physical quantity that varies with time usually in a smooth and continuous fashion.  
A digital message is an ordered sequence of symbols selected from a finite set of discrete elements
2. **Operational advantages** of digital communication system over analog communication systems are:
  - (i) An improved security message
  - (ii) Increased immunity to noise and external interference.
  - (iii) A common format for encoding different kinds of message signals for the purpose of transmission.
  - (iv) Flexibility in configuration digital communication system.
3. **Attenuation, Distortion,** Interference and Noise are the undesirable effects in the source of signal transmission.
4. **Modulation.** Process of changing some characteristic e.g. amplitude, frequency or phase of a carrier wave in accordance with the intensity of the signal is known as modulation.
5. **Types of Modulation**
  - (i) Amplitude modulation
  - (ii) Frequency modulation
  - (iii) Phase modulation.
6. **Amplitude Modulation.** The amplitude of the carrier wave changes according to the intensity of the signal. The amplitude variation of the carrier wave is at the signal frequency  $f_s$ .
7. **Modulation Factor.** The ratio of change of amplitude of carrier wave to the amplitude of normal carrier wave is called modulation factor (m).
8. Pulse modulation could be classified as: Pulse Amplitude Modulation (PAM), Pulse Duration Modulation (PDM) or Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM).
9. **Demodulation.** Demodulation is the process of recovering the signal intelligence from a modulated carrier wave.
10. **FAX.** Facsimiles of FAX means exact reproduction of the documents, a picture, letter, map etc. at receiver end.
11. **MODEM.** The term modem means modulator and demodulator. It converts a series of binary pulses of digital information into an analog signal and transmits across the phone lines.

## TOP Block Diagrams

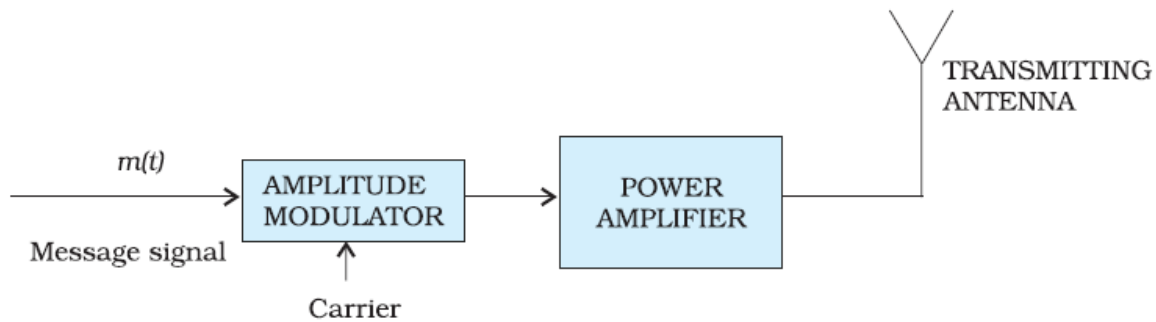
### 1. Generalized Communication systems



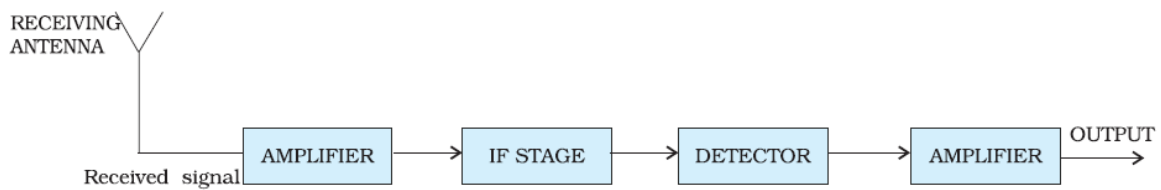
### 2. Simple Modulator for obtaining AM signal



### 3. Transmitter



### 4. Receiver



## 5. Detection of an AM signal

