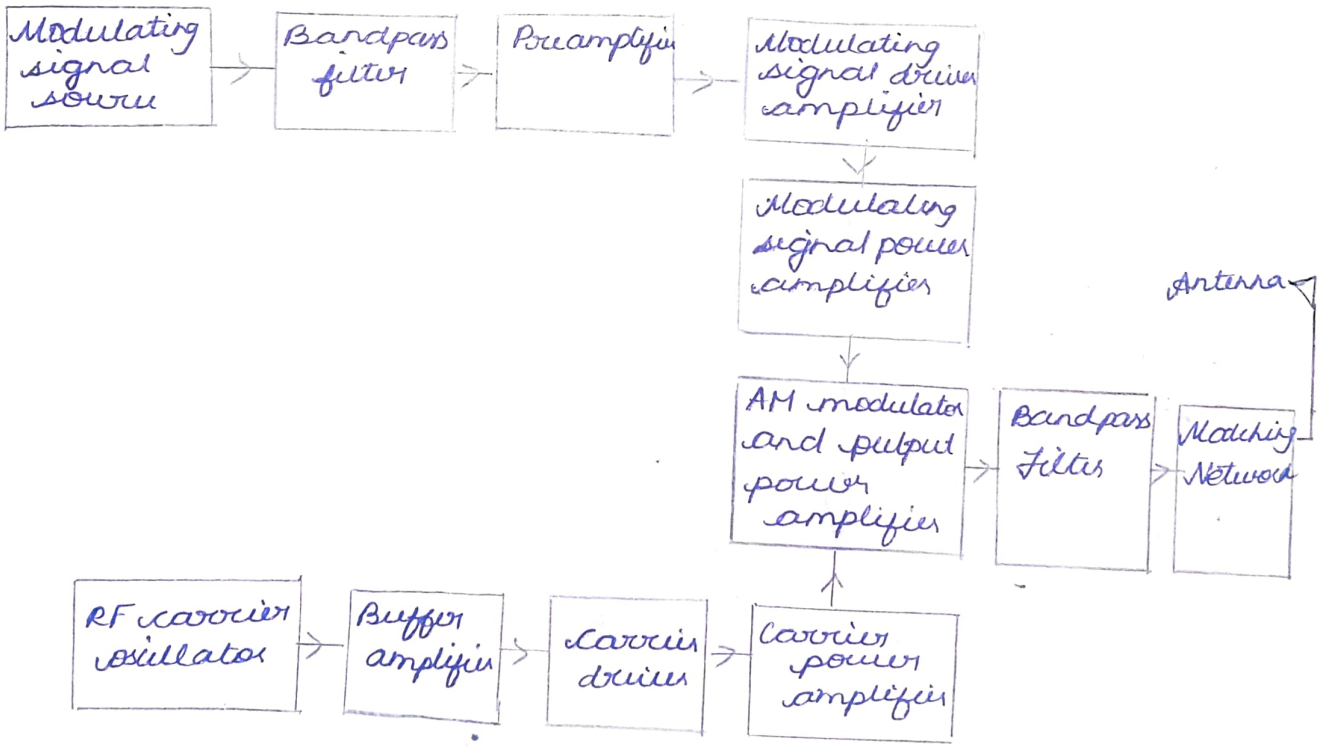
Draw the block diagram of high level transmitter and explain the operation of various blocks.

AM transmitter takes the audio/any signal as an input and delivers amplitude modulated wave to the antenna as an output to be transmitted.

In high level modulation, modulation takes place in the final stage of amplification, and therefore the modulation circuitry has to handle high power.



i) Modulating Signal Path:

⇒ Modulating Signal source provides the original signal to be transmitted. Since it has low power, it requires amplification.

⇒ Bandpass Filter removes unwanted noise and frequencies outside the required bandwidth. Only the necessary frequency components of the signal is used for modulation.

⇒ Preamplifier amplifies the filtered modulating signal. It provides impedance matching.

⇒ Modulating signal driver amplifies the information signal to an adequate level to drive the modulator.

⇒ The power amplifier amplifies the modulating signal to a high power level. This ensures that sufficient modulation index is achieved.

ii) Carrier Signal Path:

⇒ RF carrier oscillator generates a stable high-frequency radio carrier signal.

⇒ Buffer amplifier prevents variations in the oscillator circuit. It matches impedance levels between circuit.

=> Carrier Driver amplifies the carrier signal before sending it to power amplifier. It ensures the carrier has sufficient power for modulation.

=> The power amplifier amplifies the carrier signal to a high power level.

iii) Modulation and Transmission:

=> AM modulator modulates the signal. The modulating signal and carrier signal are combined. The amplitude of the carrier varies according to the modulating signal.

=> The bandpass filter, filters out unwanted harmonics.

=> The matching network matches the impedance between the transmitted output and the antenna.

=> Antenna converts the electrical signal into electromagnetic waves.