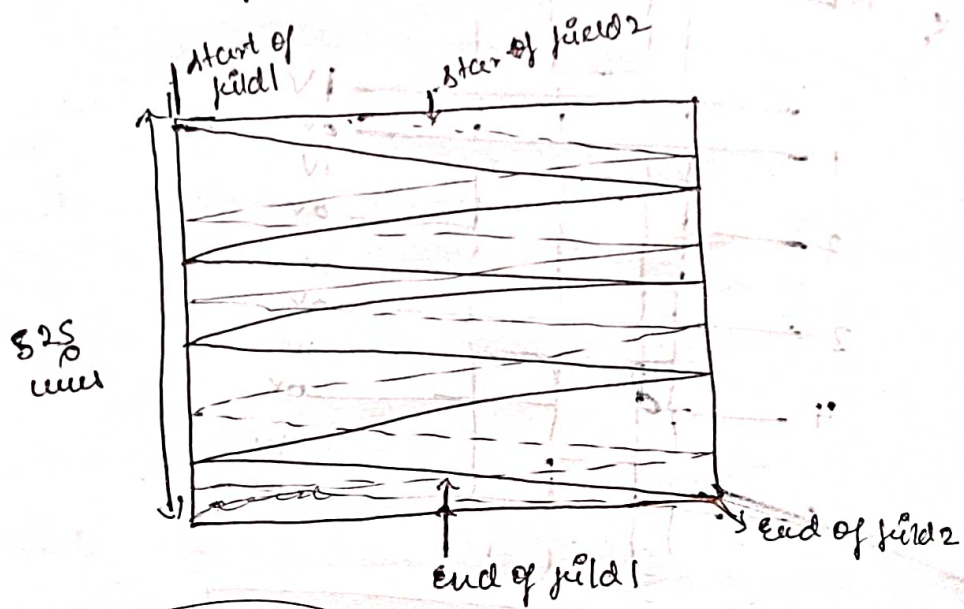
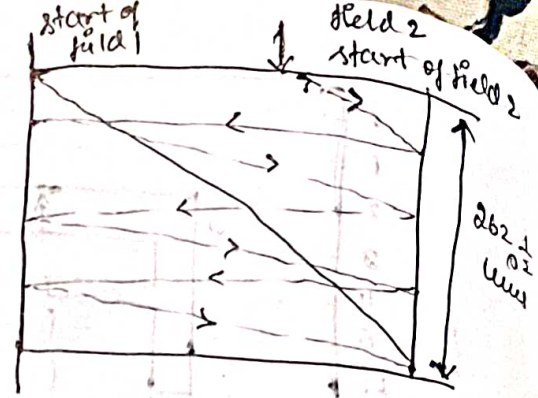
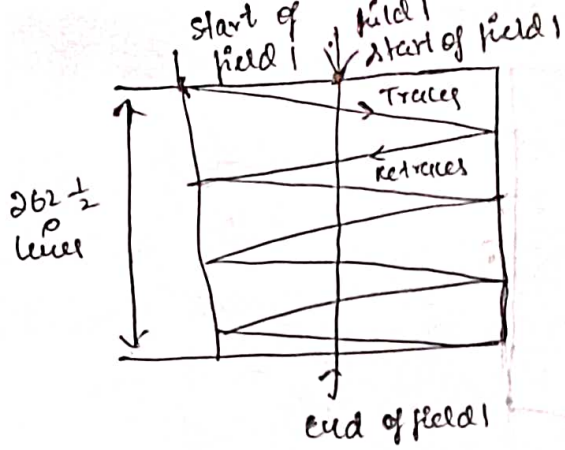


DA  
KNOT



$$R \quad G \quad B$$

$$0.299 + 0.587 + 0.144$$

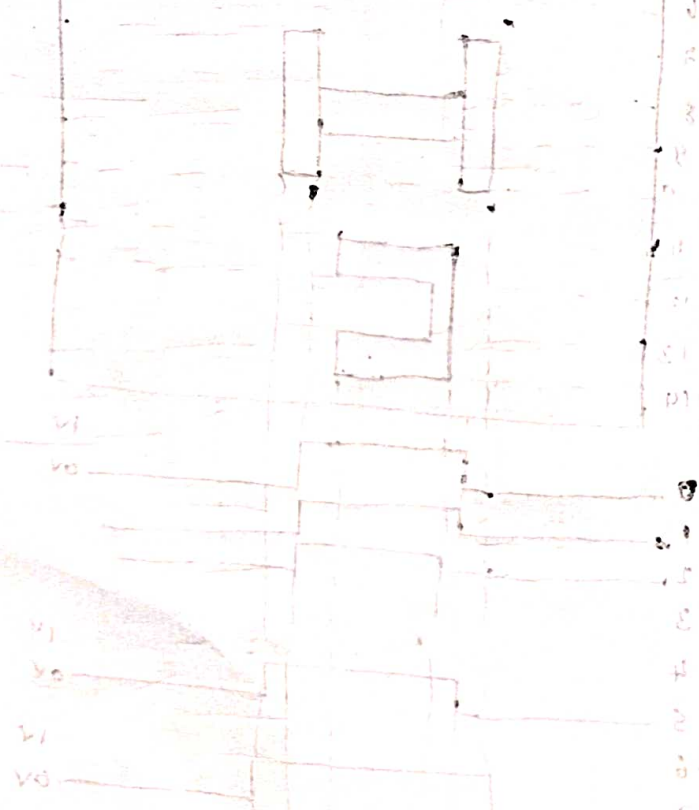
white

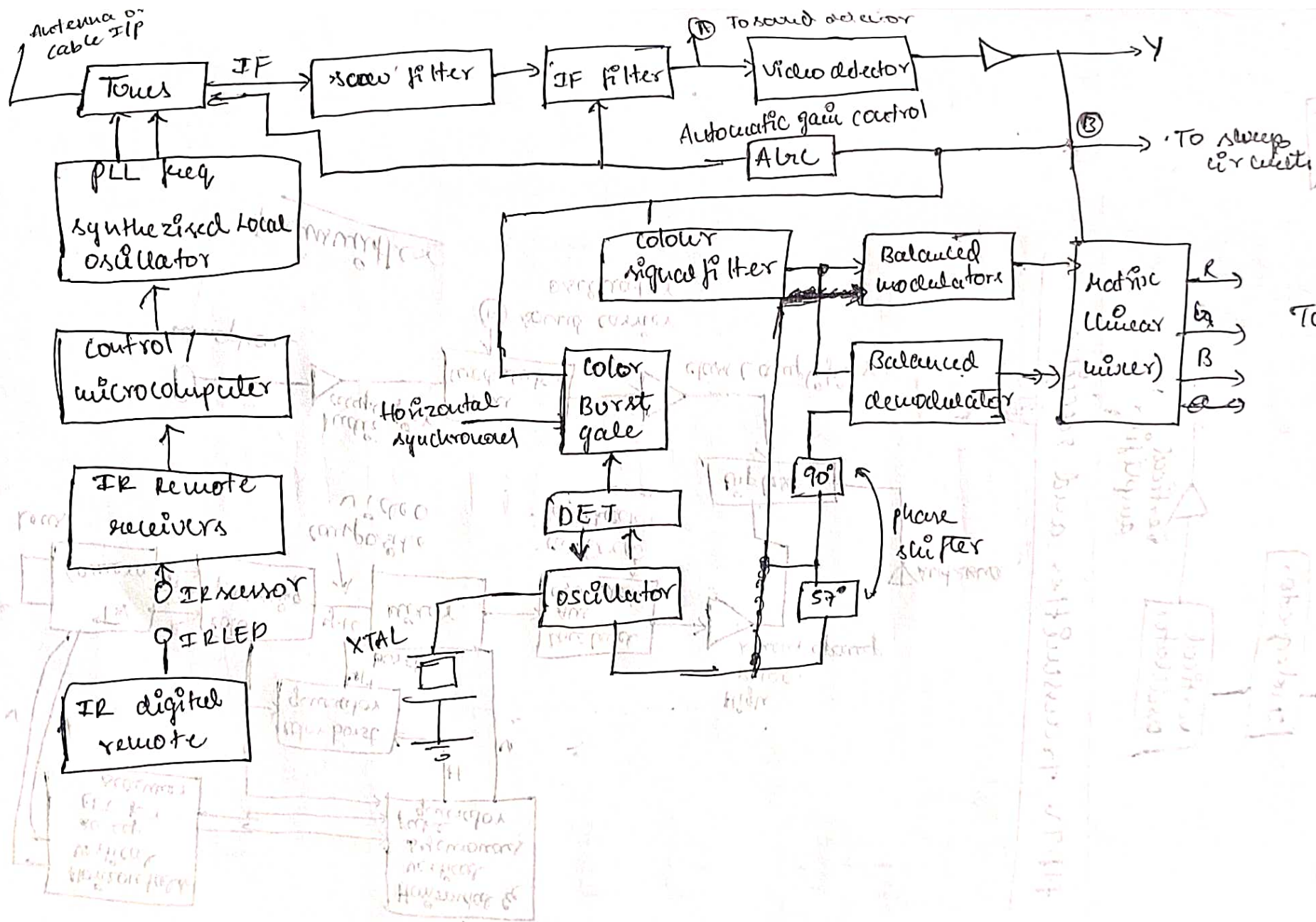
Hue

PAL-NTSC

Tones

PLL freq



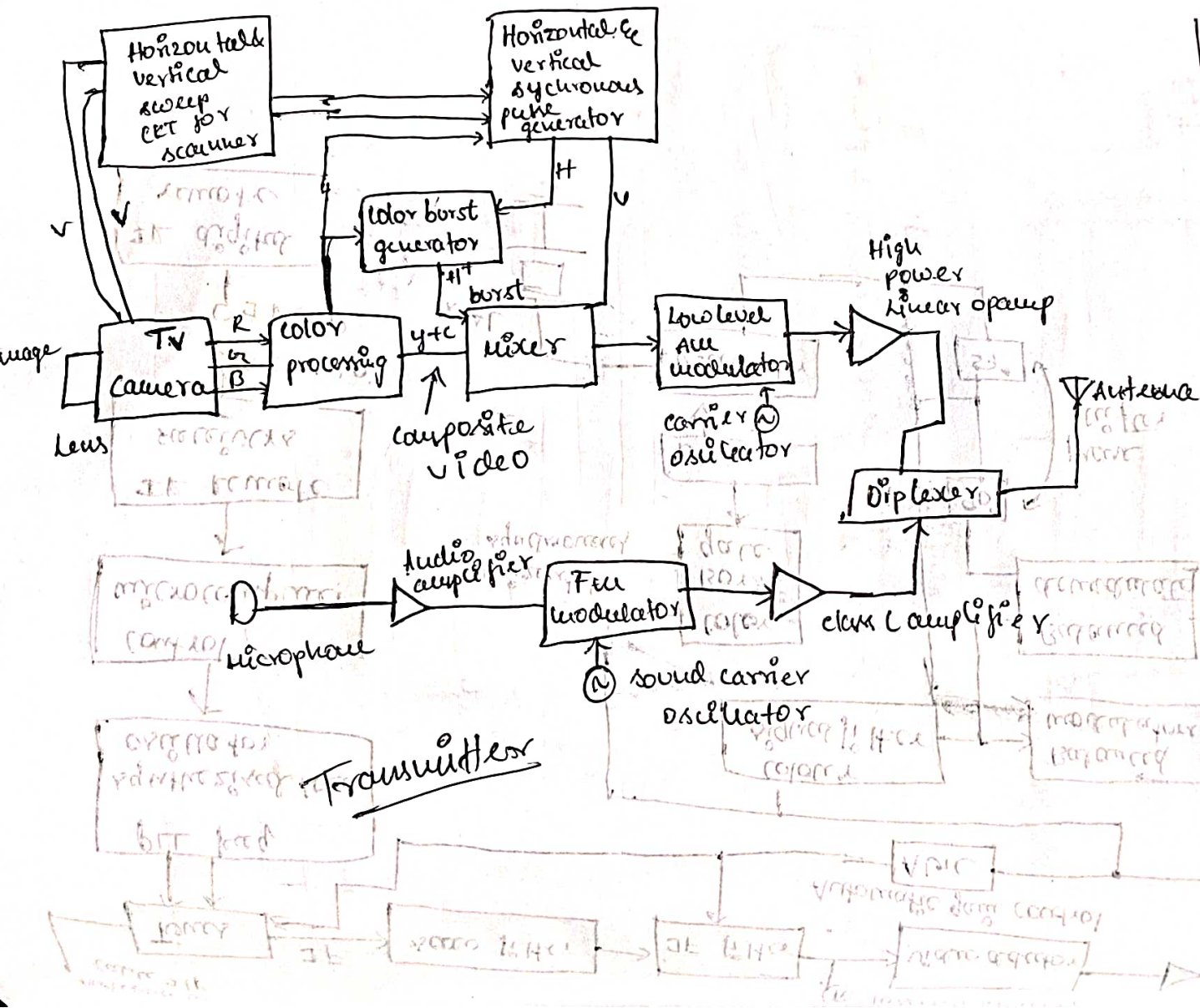


To colour CRT

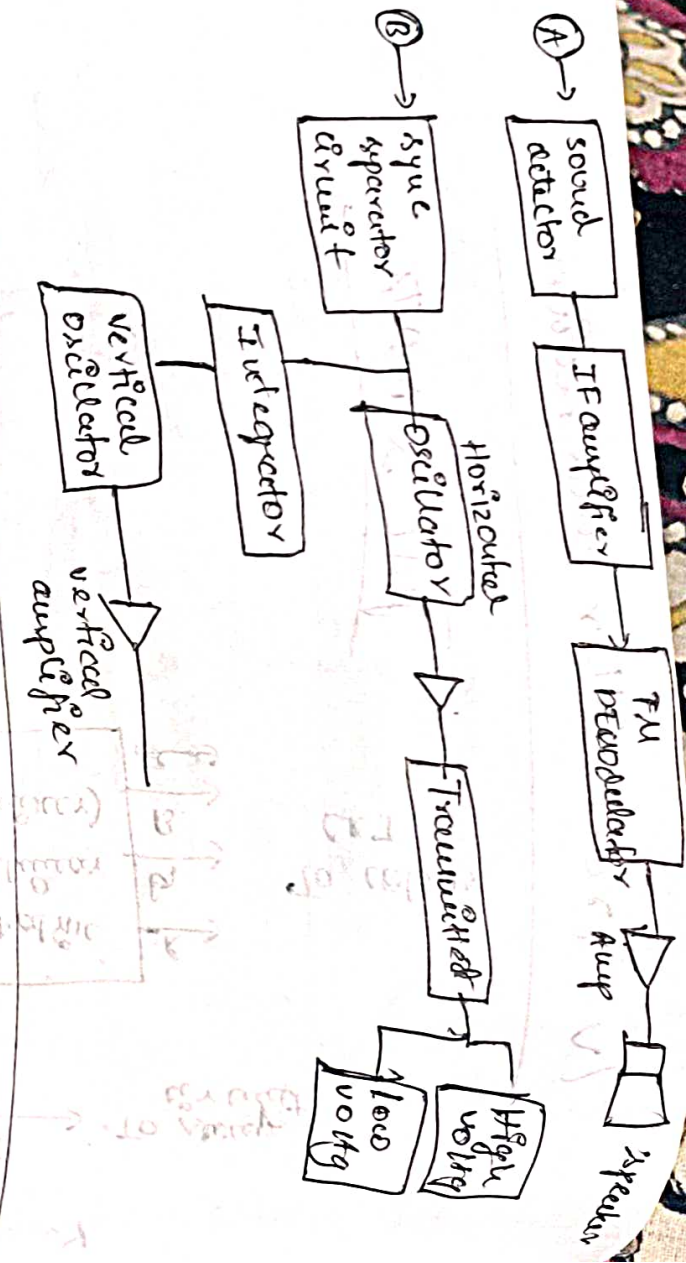
or  
PAL & NTSC

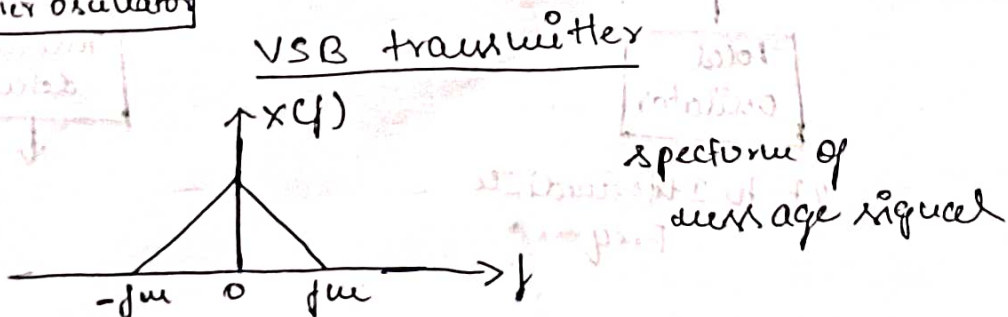
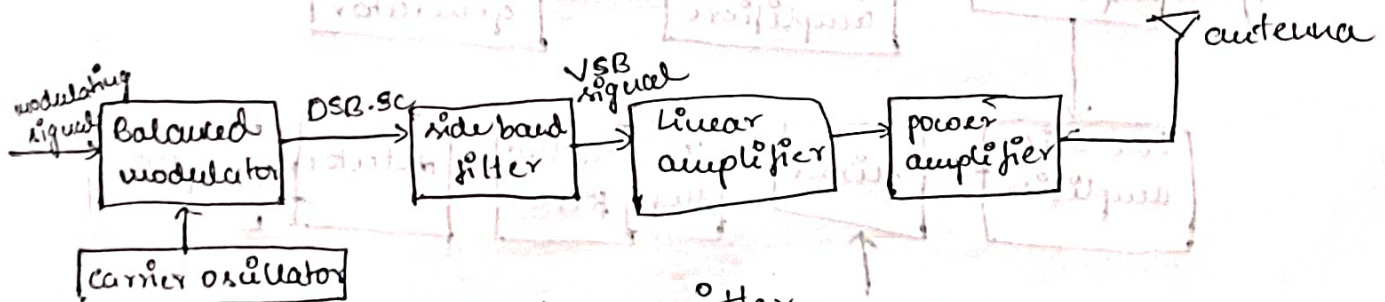
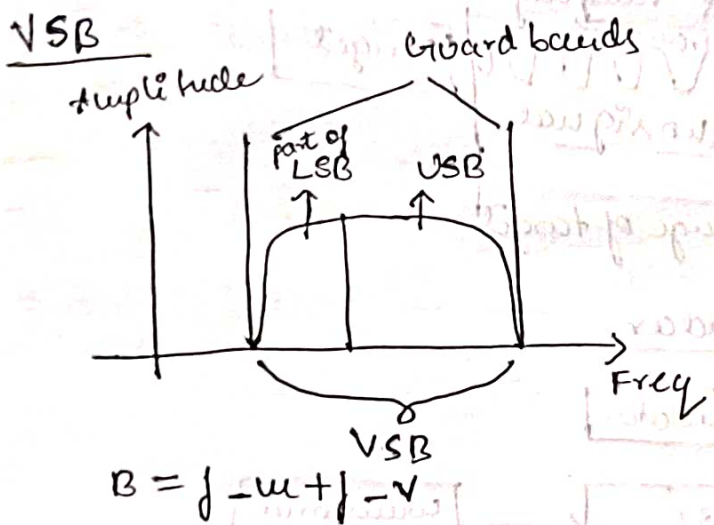
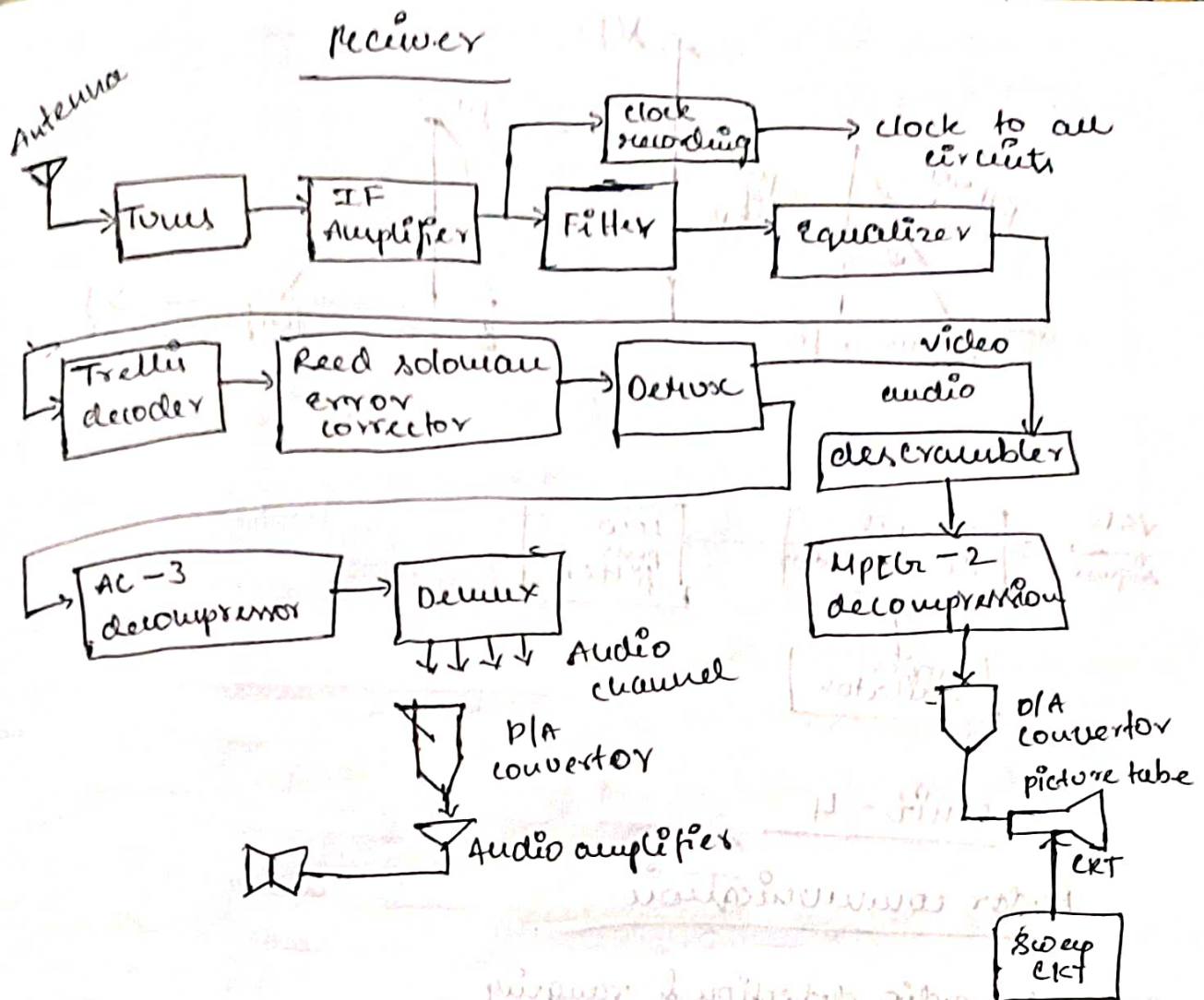
TV Transmitter and receiver



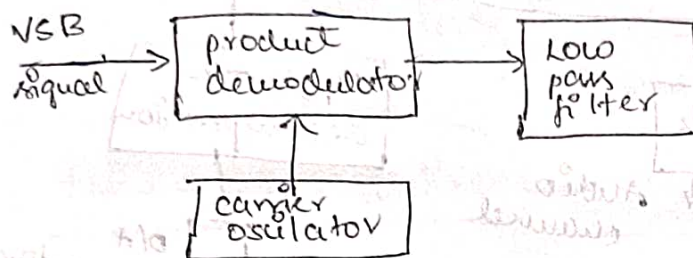
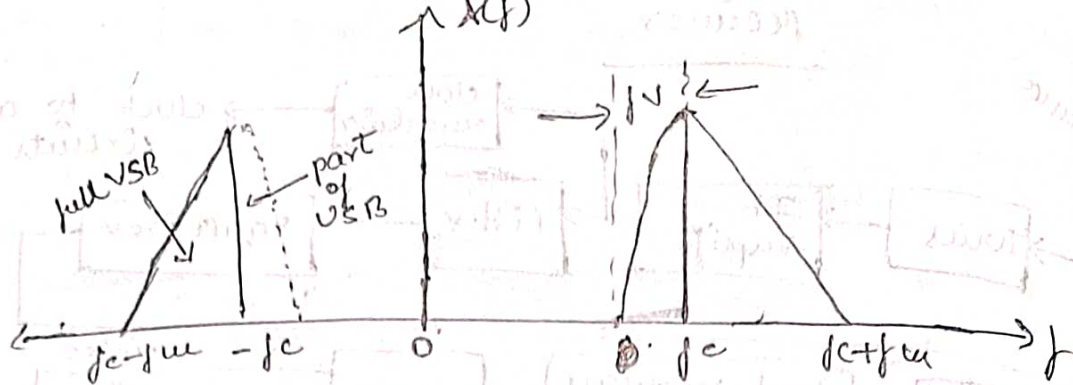


# HDTV Transmitter and receiver





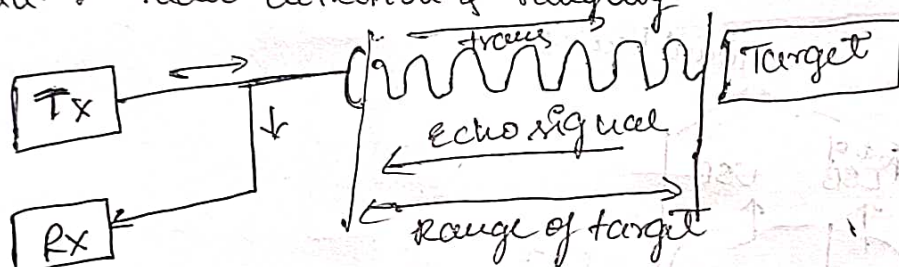




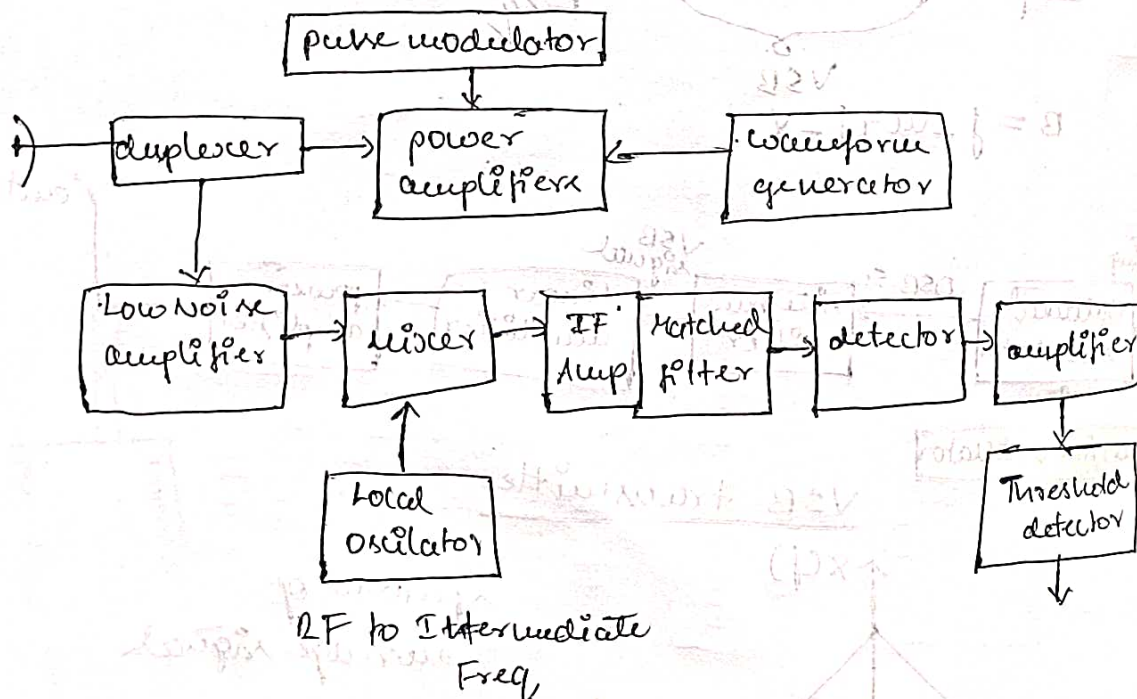
Unit - 4

## Radar communication

Radar :- radio detection & ranging



Block diagram of radar.



## Radar Equation

$p_{is}$  = power density in isotropic

$p_t$  = transmitted power

$4\pi R^2$  = area

$$p_{is} = \frac{p_t}{4\pi R^2} \quad \text{--- (1)}$$

$p_{dir}$  = power density wrt directive antenna

$$p_{dir} = \frac{p_t G}{4\pi R^2} \quad \text{--- (2)}$$

$p_{rad}$  = power radiated

$$p_{rad} = \frac{p_t G}{4\pi R^2} \cdot \sigma \quad [\sigma = \text{area of cross section}]$$

$$p_{rad} = \frac{p_t G \sigma}{(4\pi)^2 R^4} A_e \quad [A_e = \text{effective aperture}] \quad \text{--- (3)}$$

$$A_e = \beta A$$

fundamental radar eq

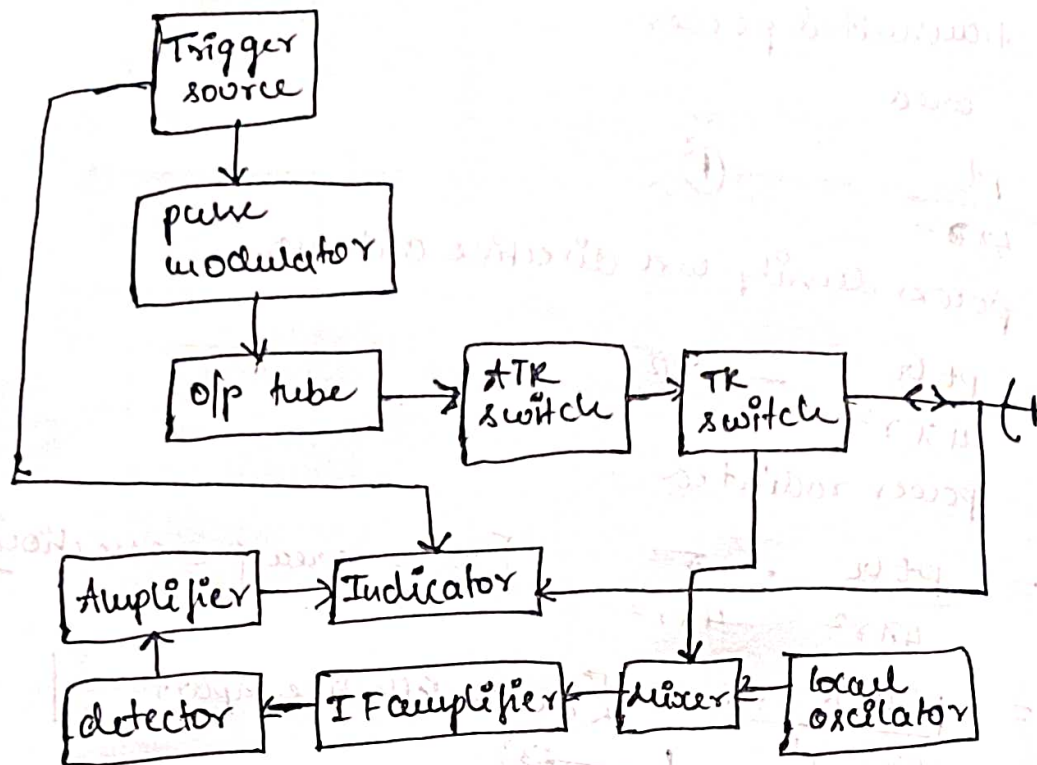
gain & effective area [relationship]

$$A_e = \frac{p_{rad} \cdot (4\pi)^2 R^4}{p_t \sigma G}$$

$$A_e = \frac{4\pi A_e}{\lambda^2}$$

$$R^4 = \frac{p_t G \sigma A_e}{(4\pi)^2 p_{rad}} \Rightarrow R = \left( \frac{p_t G \sigma A_e}{(4\pi)^2 p_{rad}} \right)^{\frac{1}{4}}$$

# 1) pulsed radar :-



ATR - Anti Transmitter & receiver switch

TR - Transmitter receiver switch