VIDEO.

↳ motion video is a combination of image & audio.

↳ consists of still images called frames displayed to the user one after another at a specific speed called frame rate (frames/sec).

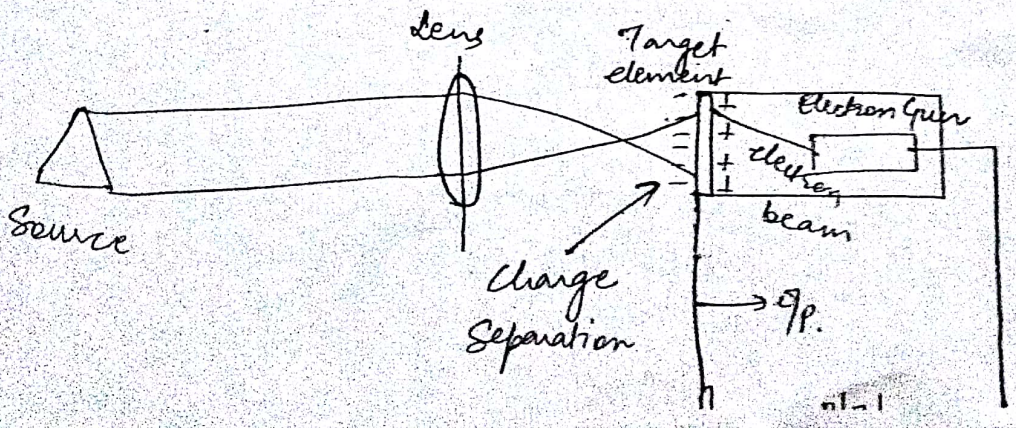
↳ audio is added & synchronized w the apparent movement of images.

↳ motion picture is recorded on celluloid film & displayed in cinema by projecting on a screen whereas motion video is represented in the form of electrical signals as o/p from video cameras.

↳ Analog Video Camera

↳ record a succession of still images & then convert the brightness & color info of image into electrical signals.

↳ Monochrome Video Camera



It consists of a vacuum tube containing an electron gun & a photo sensitive conductive plate called target.

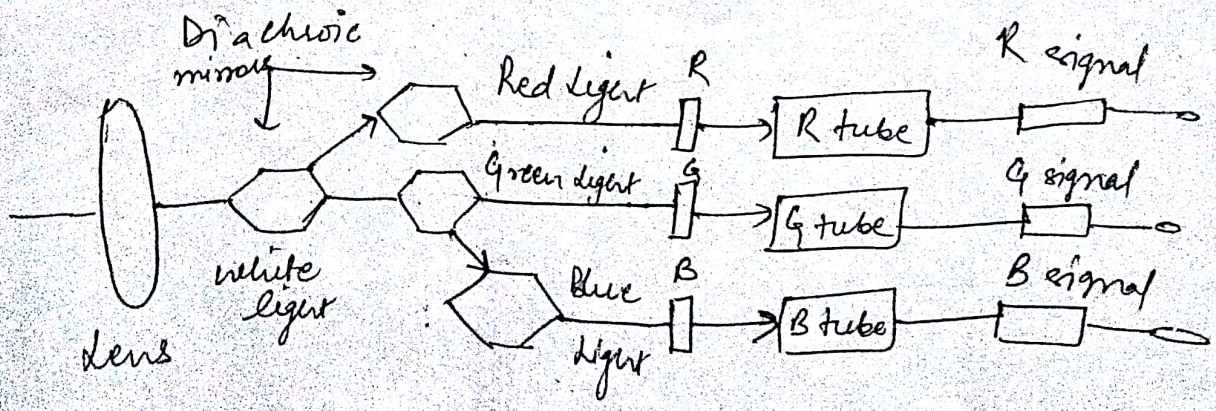
It lens focusses the light from an object on the target.

It absorption of energy caused by light striking the target, electrons acquire sufficient energy to take part in current flow.

It a charge pattern appears on the inner surface of the target that is most true where the brightness or luminosity of the scene is the greatest.

It moving beam of electrons originate in the electron gun & scans the charge pattern in the same way a raster is produced in a monitor.

It Color video Camera



- consists of 3 camera tubes receiving selectively filtered colors.
- Each tube develops a signal voltage proportional to the respective color intensity.
- Light is processed by objective lens system.
- Image formed is split into 3 images by glass prisms.

Transmission of Video Signals

- RGB components of color image can be transmitted easily in the original format.
- New YC format based on luminance chrominance principle.
- Human visual syst is more sensitive to green than red & least sensitive to blue.
- Video signals are expressed in terms of luminance - chrominance instead of RGB.

luminance
↓
describes variation of perceived brightness by HVS in diff. portions of image (out regard to any color. Denoted by 'Y'.
Eg: Grayscale images.

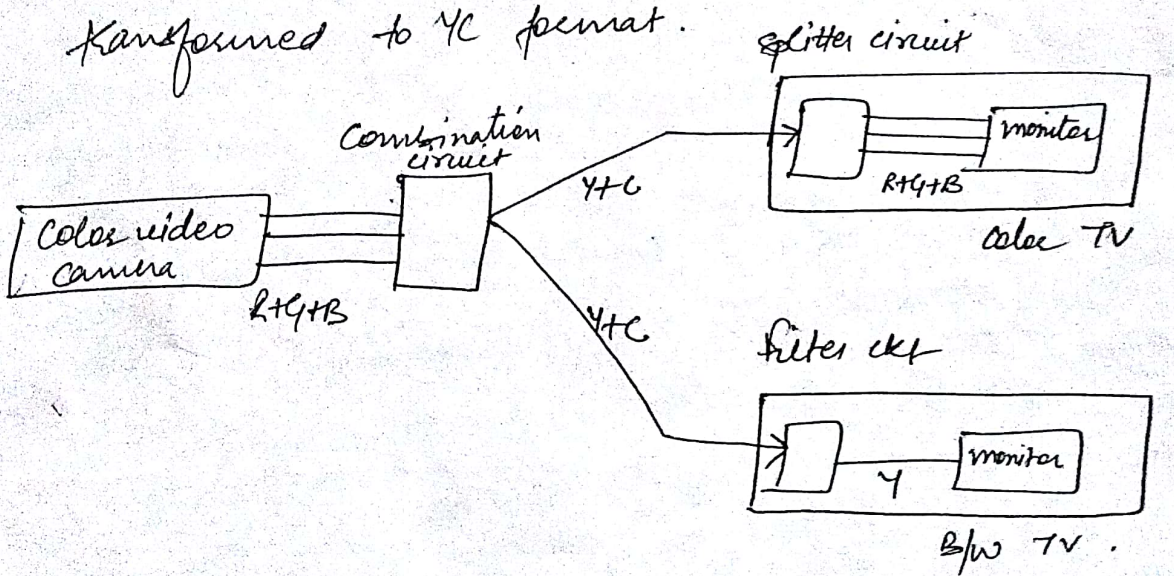
chrominance
↓
describes variation of color info in diff. parts of image (out regard to any brightness information.
Denoted by C.

- Hue (H)
- Saturation (S)

↳ image consists of 2 portions, luminance component & chrominance component.

↳ lighter portions in luminance component indicate regions of higher brightness while lighter portions in chrominance component indicate regions of higher saturation of colors.

↳ RGB o/p signals from video camera are transformed to YC format.



↳ Y = average of R+G+B.

↳ to generate a realistic greyscale image, more emphasis should be allotted to green component & least to blue.

$$\therefore Y = 0.3R + 0.59G + 0.11B.$$

↳ slight change in green color would produce a relatively large change in brightness than equivalent change in red & blue