LECTURE - 22

BJT $\rightarrow$ 2 TYPES

1) $\text{P TYPE MATERIAL BETWEEN TWO N-TYPE MATERIALS}$ NPN

2) $\text{N TYPE MATERIAL BETWEEN TWO P-TYPE MATERIALS}$ PNP

3- TERMINAL DEVICE

BASE (B)
COLLECTOR (C)
EMITTER (E)
PnP

\[ \begin{array}{c}
B & \rightarrow & I_B \\
\downarrow & & \uparrow \\
P & \rightarrow & n \\
\uparrow & & \downarrow \\
P & \rightarrow & C \rightarrow I_C \\
\end{array} \]

HOLE FLOW

\[ \begin{array}{c}
E & \rightarrow & I_E \\
\uparrow & & \downarrow \\
C & \rightarrow & V_E \\
\end{array} \]

CIRCUIT SYMBOL
BJT OPERATING CONDITIONS

ACTIVE

1. BASE EMITTER JUNCTION → FORWARD BIASED

2. COLLECTOR BASE JUNCTION → REVERSE BIASED
FB EB JUNCTION

1. Junction width narrows
2. Diffusion current dominates
3. Holes injected into emitter region
4. Electrons injected into base region

RB CB JUNCTION

1. Junction & width increases
2. Drift current dominates
3. Electrons are extracted from collector region
4. Holes are extracted from base region