Revision Booster
WORKSHOP
for
NEET & JEE Main

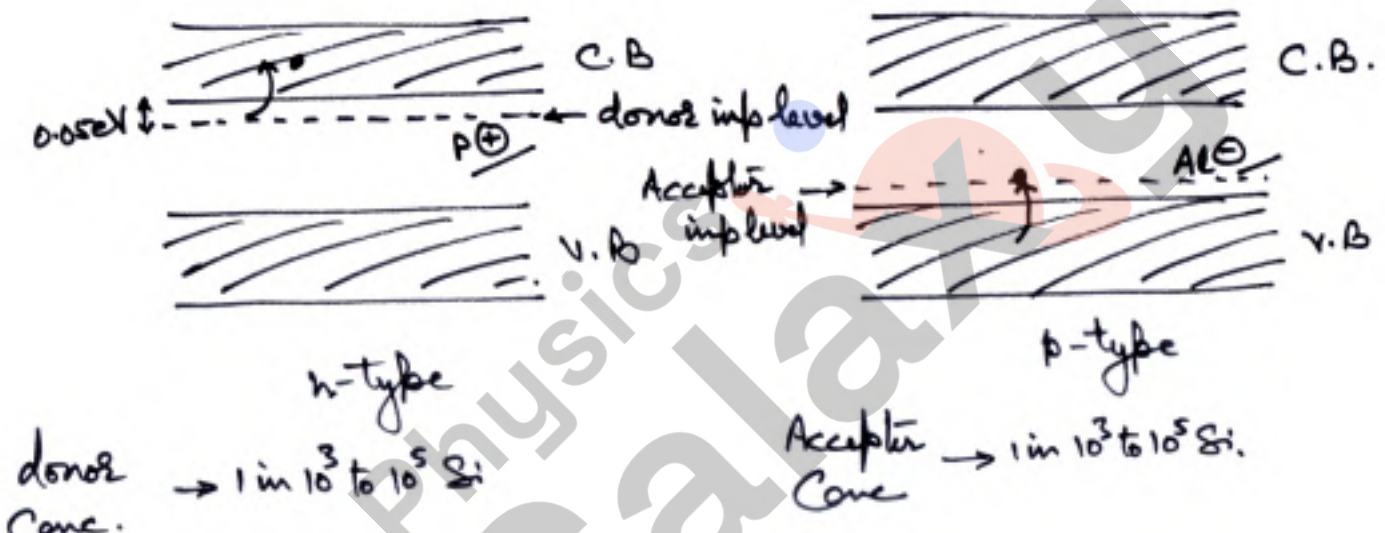
Semiconductors

Notes of Revision Booster Workshop for JEE Main & NEET

9000+ Classes available on PHYSICS GALAXY Mobile app

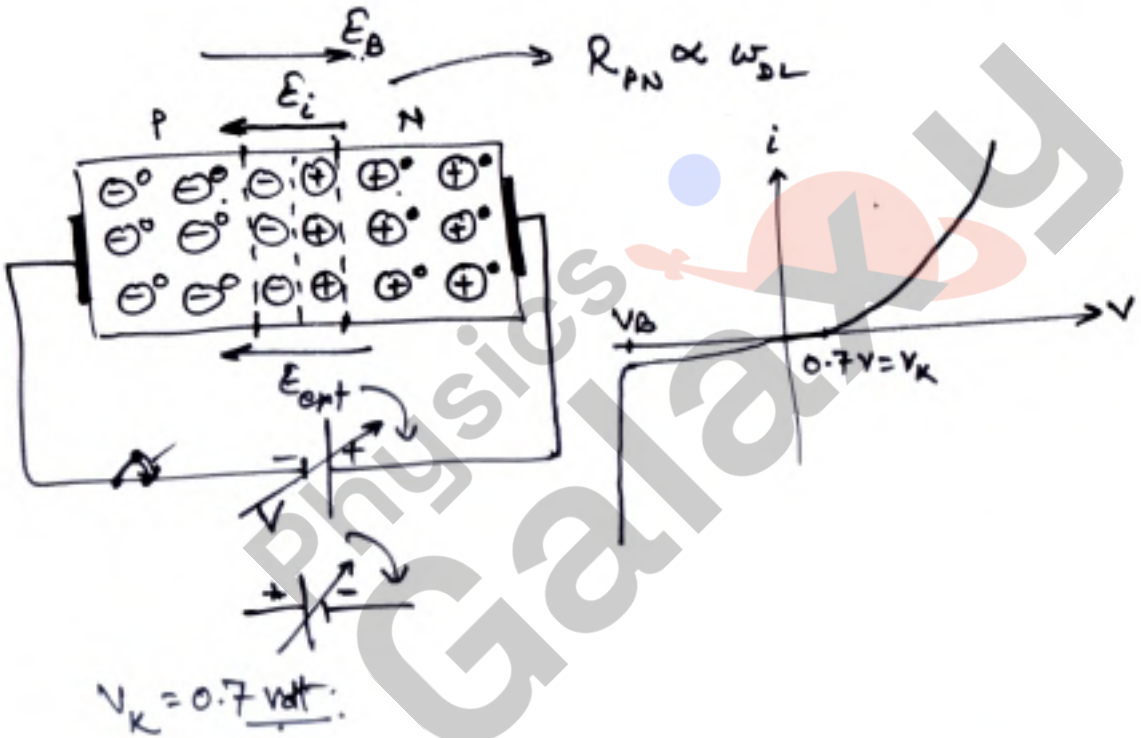
QUESTIONS BASED ON

BAND GAPS IN p-TYPE AND n-TYPE SEMICONDUCTORS



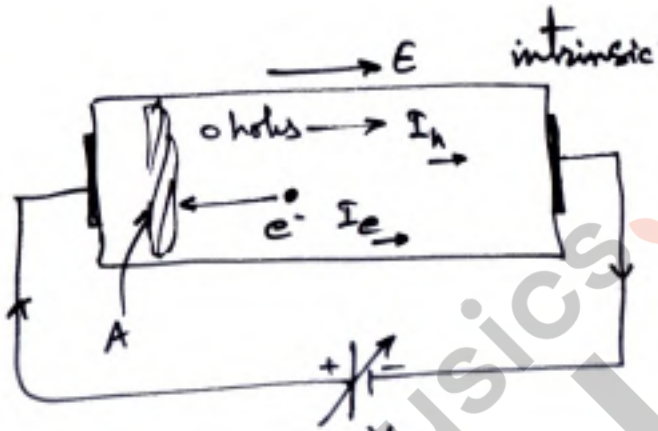
QUESTIONS BASED ON

ELECTRIC FIELD IN DEPLETION LAYER OF A p-n JUNCTION



QUESTIONS BASED ON

CONDUCTION IN SEMICONDUCTOR



$I_T = I_e + I_h$

$I = A[J_e + J_h]$ –

$I = An_i e(v_{de} + v_{dh})$ –

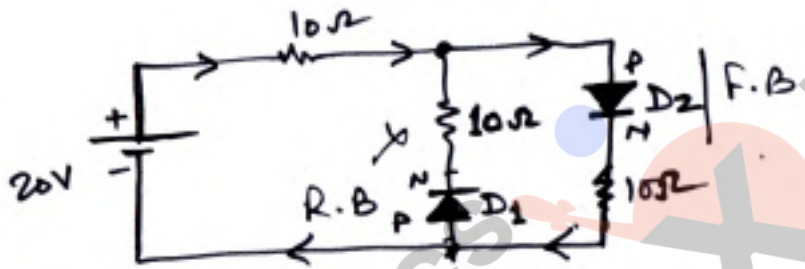
$I = An_i e E(\mu_e + \mu_h)$ –

$I = AE(\sigma_e + \sigma_h)$ –

$v_d = \mu E$.

QUESTIONS BASED ON

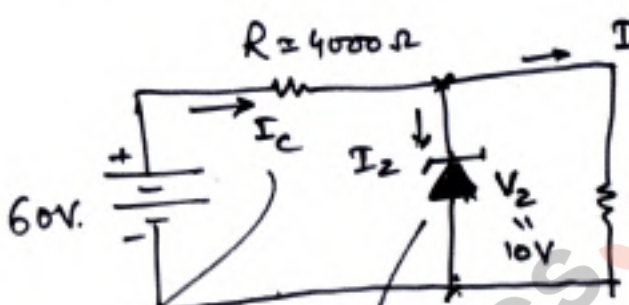
IDEAL DIODES IN CIRCUITS



$$I = \frac{20}{10+10} = 1\,A.$$

QUESTIONS BASED ON

CIRCUITS WITH ZENER DIODE



$I_L = \frac{V_Z}{R_L} = \frac{10}{2000} = 0.005\,A$

$I_Z = I_C - I_L = \frac{1}{80} - \frac{1}{200} =$ — ✓

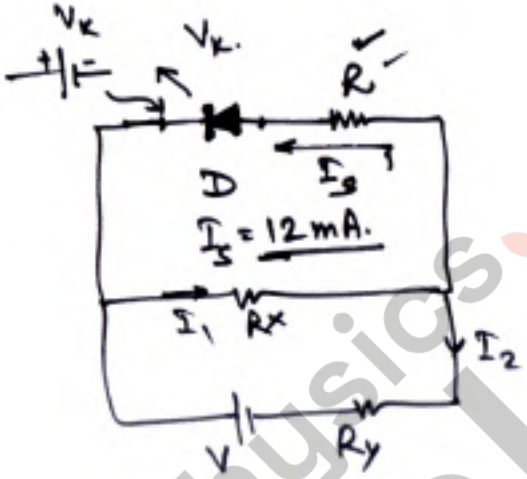
$I_C = \frac{50}{4000}$

$I_C = \frac{1}{80}\,A$

in B/D state it acts like a voltage stabilizer.

QUESTIONS BASED ON

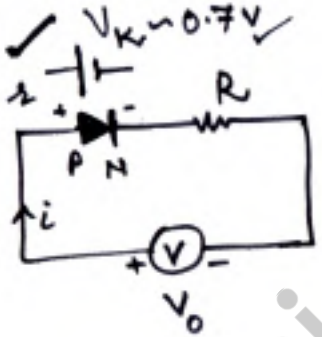
SAFE CURRENT LIMIT OF A DIODE



For safe limit of a diode Series resistance is used

QUESTIONS BASED ON

FORWARD BIASED REAL DIODE IN CIRCUIT



ckt current

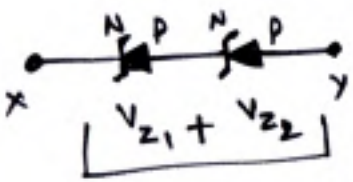
$$i = \frac{V_0 - V_K}{R}$$ (if there is no resistance in diode)

otherwise

$$i = \frac{V_0 - V_K}{R + r_0}$$

QUESTIONS BASED ON

ZENER DIODES IN SERIES



If $V_{Z_1} = V_{Z_2} = V_Z$

$V_{Z_{XY}} = 2V_Z$

$V_{XY} = V_{Z_1}$ or V_{Z_2}