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INTRODUCTION TO ELECTRONICS ENGINEERING: CSE-A

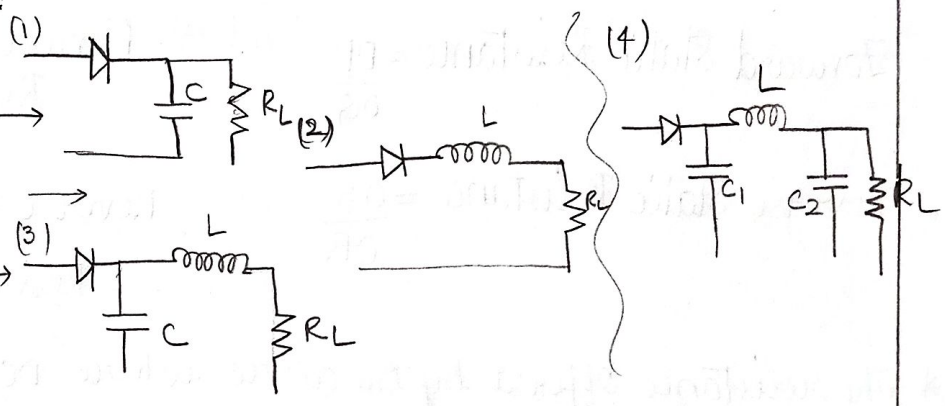
ASSIGNMENT-1

1. Discuss the necessity and types of electronic filters used at the output of rectifiers:

Ans: The output of a rectifier contains d.c. component as well as a.c. component. Filters are used to minimise the undesirable a.c. i.e. ripple leaving only the d.c. component to appear at the output.

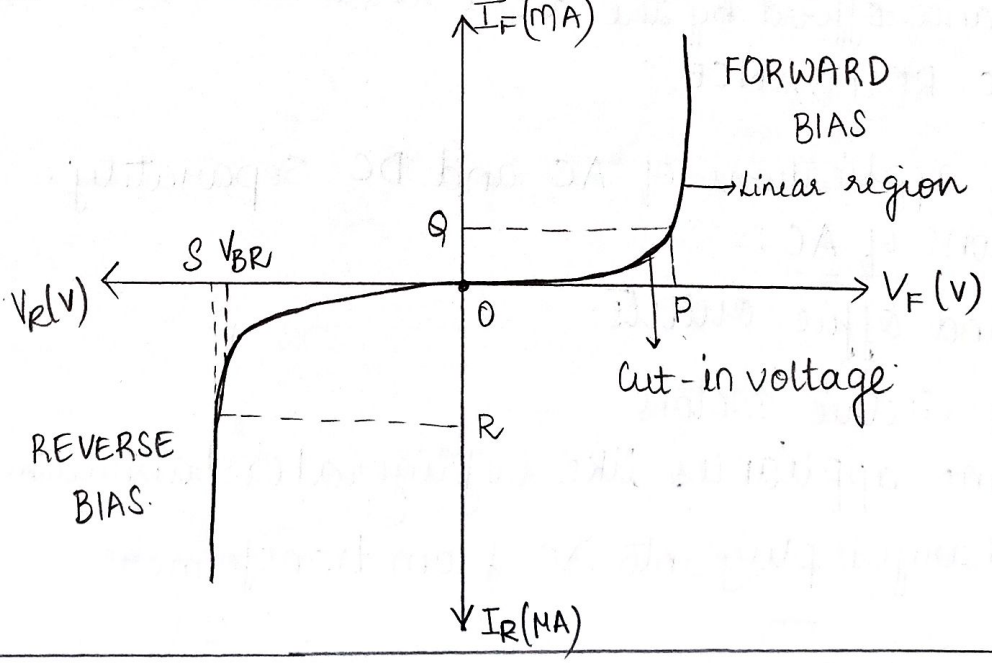
TYPES OF FILTERS:

1) Capacitor Filter →
2) Inductor Filter →
3) L- TYPE Filter →
4) π- TYPE Filter



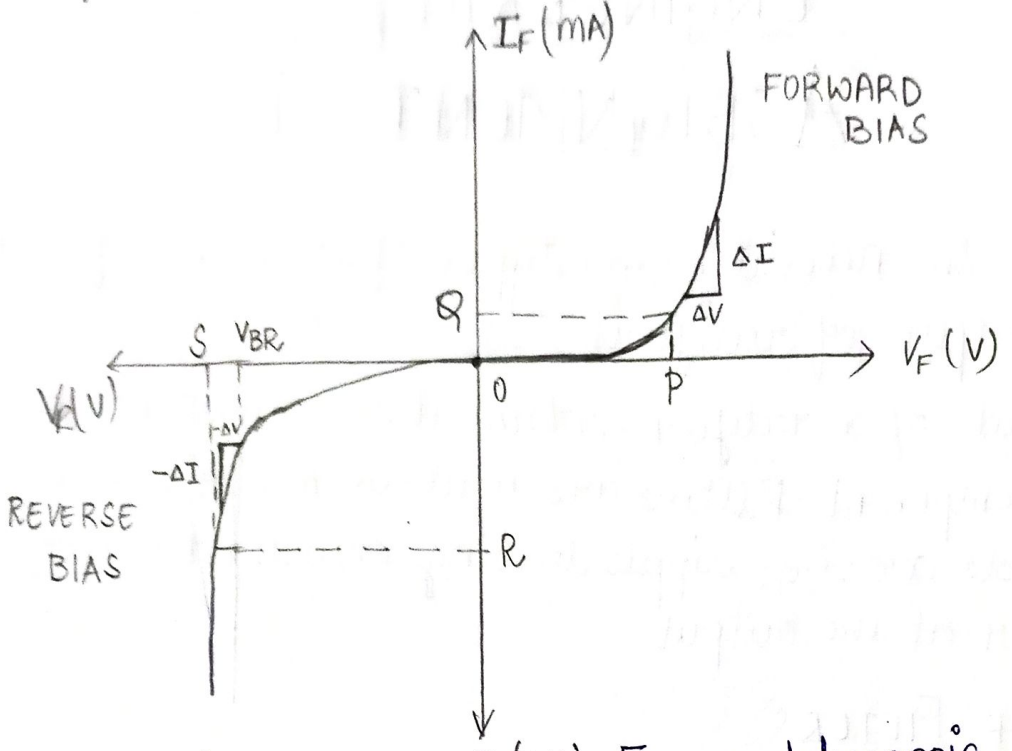
2. Explain the V-I characteristics of PN junction diode.

Ans:



3. How do you find the static and dynamic resistances of a diode? Explain with the help of a graph?

Ans:



Forward Static Resistance $= \frac{DP}{OQ}$

Forward dynamic Resistance $= \frac{\Delta V}{\Delta I}$

Reverse Static Resistance $= \frac{OS}{OR}$

Reverse dynamic Resistance $= -\frac{\Delta V}{-\Delta I} = \frac{\Delta V}{\Delta I}$

* The resistance offered by the diode where DC flows is called STATIC RESISTANCE.
* The resistance offered by the diode where AC flows is called DYNAMIC RESISTANCE.

4. List the applications of AC and DC Separately.

Ans: Applications of AC:

1) Home and office outlets.
2) Powering electric motors.
3) Large home appliances like refrigerators, dishwashers, get AC current.
4) Mobile chargers plug into AC from transformers.

Applications of DC:

1) Cell Phones: Flash lights
2) Hybrid and electric vehicles
3) Laptops; lifts finally gets DC as adapters convert AC to DC.

5: Determine the values of I_C and I_E for the transistor circuit of $\beta = 200$ and $I_B = 0.125\,mA$.

Ans:

$I_B = 0.125\,mA$

$\beta = 200$

$\beta = \frac{I_C}{I_B}$

$I_C = \beta \cdot I_B$

$= 200 \times 0.125\,m$

$= 12.5 \times 10^{-3} \times 2$

$= 25.0 \times 10^{-3}$

$\boxed{I_C = 25\,mA}$

$I_E = I_C + I_B$

$= 25\,mA + 0.125\,mA$

$\boxed{I_E = 25.125\,mA}$