Terms Related to ac Circuits.

(1) Resistance (R): The opposition offered by a conductor to the flow of current through it is defined as the resistance of that conductor. Reciprocal of resistance is known as conductance (G)
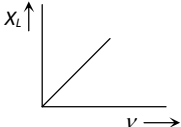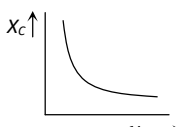
i.e. $G = \dfrac{1}{R}$

(2) Impedance (Z): The opposition offered by the capacitor, inductor and conductor to the flow of ac through it is defined as impedance. Its unit is ohm (Ω).

$$Z = \dfrac{V_0}{i_0} = \dfrac{V_{rms}}{i_{rms}}$$

(3) Reactance (X): The opposition offered by inductor or capacitor or both to the flow of ac through it is defined as reactance. It is of following two type –

Inductive reactance (XL)	Capacitive reactance (XC)
(i) Offered by inductive circuit	(i) Offered by capacitive circuit
(ii) $X_L = \omega L = 2\pi \nu L$	(ii) $X_C = \dfrac{1}{\omega C} = \dfrac{1}{2\pi \nu C}$
(iii) $V_{dc} = 0$ so for dc, XL = 0	(iii) For dc XC = ∞
(iv) XL-v Graph	(iv) XC - v Graph

Note: Resultant reactance of LC circuit is defined as X = XL ~ XC .

(4) Admittance (Y): Reciprocal of impedance is known as admittance $\left(Y = \dfrac{1}{Z} \right)$ its unit is mho.

(5) Susceptance (S): the reciprocal of reactance is defined as susceptance $\left(S = \dfrac{1}{X} \right)$ it is of two type

(i) Inductive susceptance $S_L = \dfrac{1}{X_L} = \dfrac{1}{2\pi v L}$ and (ii) Capacitive susceptance,

$S_C = \dfrac{1}{X_C} = \omega C = 2\pi v C$.