

- 7.2** An alternating current generator has an internal resistance  $R_g$  and an internal reactance  $X_g$ . It is used to supply power to a passive load consisting of a resistance  $R_L$  and a reactance  $X_L$ . For maximum power to be delivered from the generator to the load, the value of  $X_L$  is equal to
- (a) zero.
  - (b)  $X_g$ .
  - (c)  $-X_g$ .
  - (d)  $R_g$ .

2. Internal resistance =  $R_g$

Internal reactance =  $X_g$

Resistance (external) =  $R_g$

Reactance (external) =  $X_L$

For maximum power, total reactance  $\Rightarrow 0$

$$\Rightarrow X_g + X_L = 0$$

$$\Rightarrow \boxed{X_L = -X_g}$$

$\Rightarrow$  Option (c) is the answer.