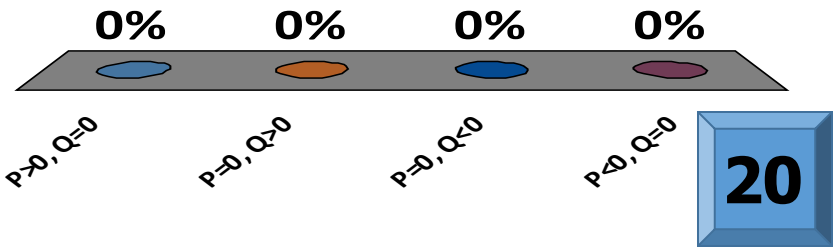
EECE 290, Problem solving

Session 4

using rms values: $S = VI^* = P + jQ = Z|I|^2 = (R + jX)|I|^2 = Y^*|V|^2 = (G - jB)|V|^2$

For a capacitance,

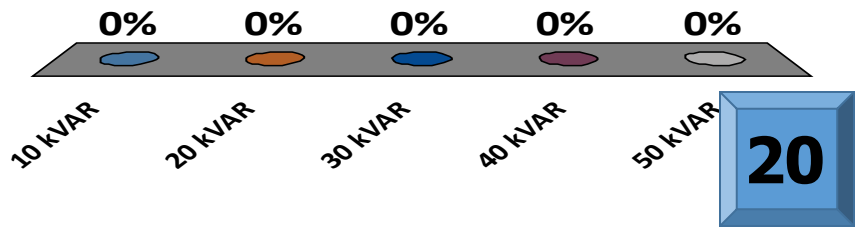
A. P>0, Q=0
B. P=0, Q>0
C. P=0, Q<0
D. P<0, Q=0



using rms values: $S = VI^* = P + jQ = Z\,|I|^2 = (R + jX)\,|I|^2 = Y^*\,|V|^2 = (G - jB)\,|V|^2$

$|S| = 50$ kVA, $P = 40$ kW, $|Q| = ?$

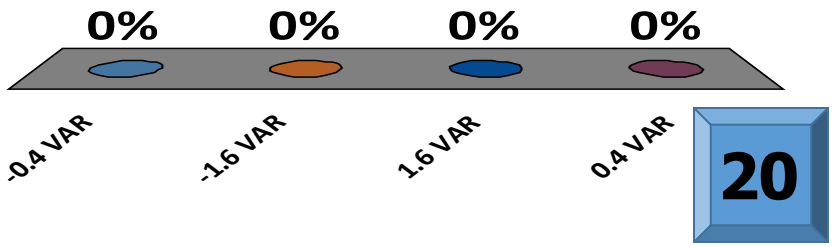
A. 10 kVAR
B. 20 kVAR
C. 30 kVAR
D. 40 kVAR
E. 50 kVAR



using rms values: $S = VI^* = P + jQ = Z\,|I|^2 = (R + jX)\,|I|^2 = Y^*\,|V|^2 = (G - jB)\,|V|^2$

Over a 1 mF capacitance the rms voltage is 4 V with ω=100 rad/s, what is the value of Q?

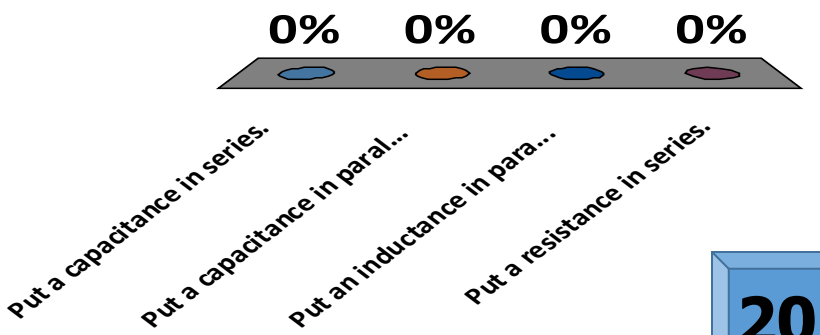
A. -0.4 VAR
B. -1.6 VAR
C. 1.6 VAR
D. 0.4 VAR



using rms values : $S = VI^* = P + jQ = Z|I|^2 = (R + jX)|I|^2 = Y^*|V|^2 = (G - jB)|V|^2$

A load absorbs 1-j kVA. In order to get pf=1, we must?

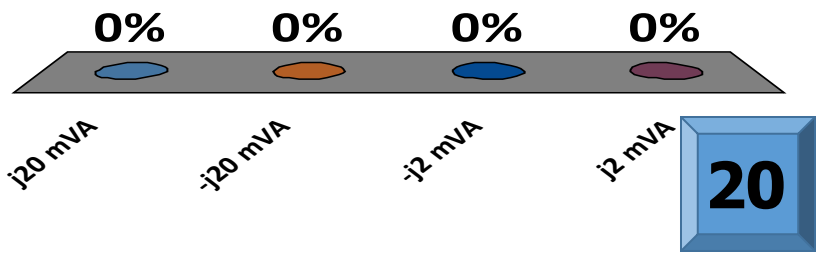
A. Put a capacitance in series.
B. Put a capacitance in parallel.
C. Put an inductance in parallel or series
D. Put a resistance in series.



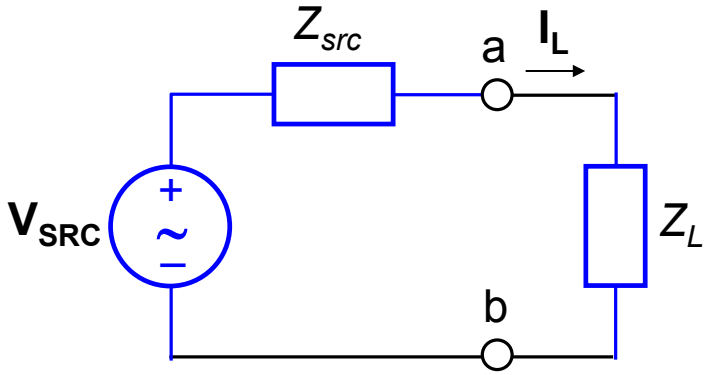
using rms values: $S = VI^* = P + jQ = Z|I|^2 = (R + jX)|I|^2 = Y^*|V|^2 = (G - jB)|V|^2$

A current source of 0.1 A_{rms}, a capacitance of –j4 Ω and an inductance of j2 Ω are connected in series, what is the value of S?

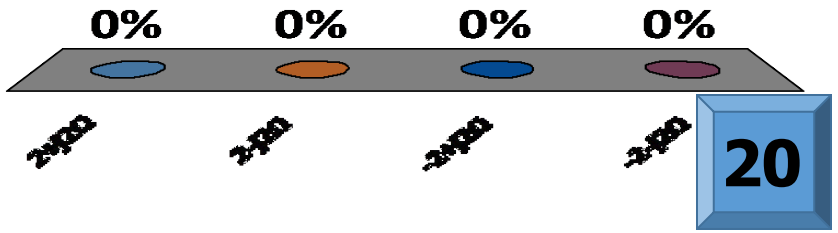
A. j20 mVA
B. -j20 mVA
C. -j2 mVA
D. j2 mVA



Z_{src}=2+j2Ω, for maximum power transfer, Z_L=?

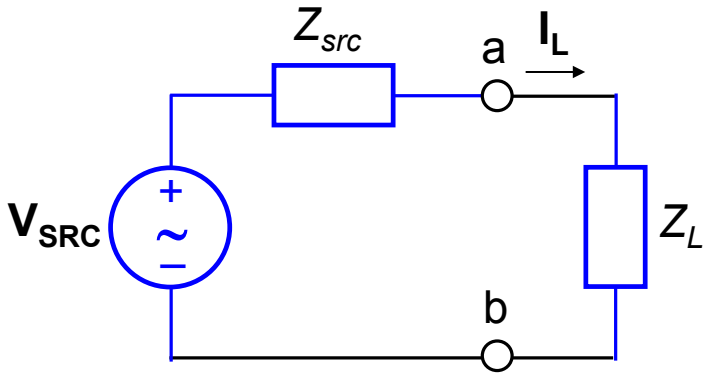


A. 2+j2Ω
B. 2-j2Ω
C. -2+j2Ω
D. -2-j2Ω



Z_{src}=2+j2Ω, Z_L has the value for maximum power transfer, how much power is transferred?

V_{src} is the amplitude.

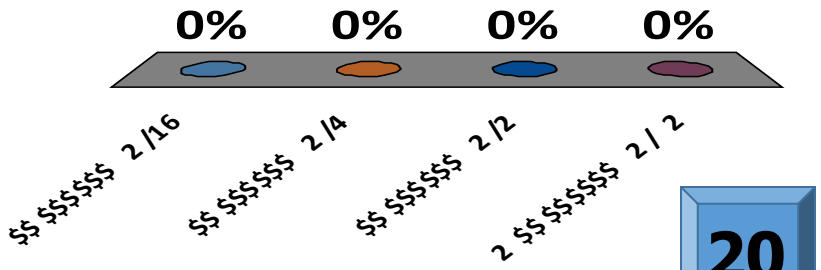


A. $V_{src}^{\ 2}/16$

B. $V_{src}^{\ 2}/4$

C. $V_{src}^{\ 2}/2$

D. $2V_{src}^{\ 2}/\sqrt{2}$



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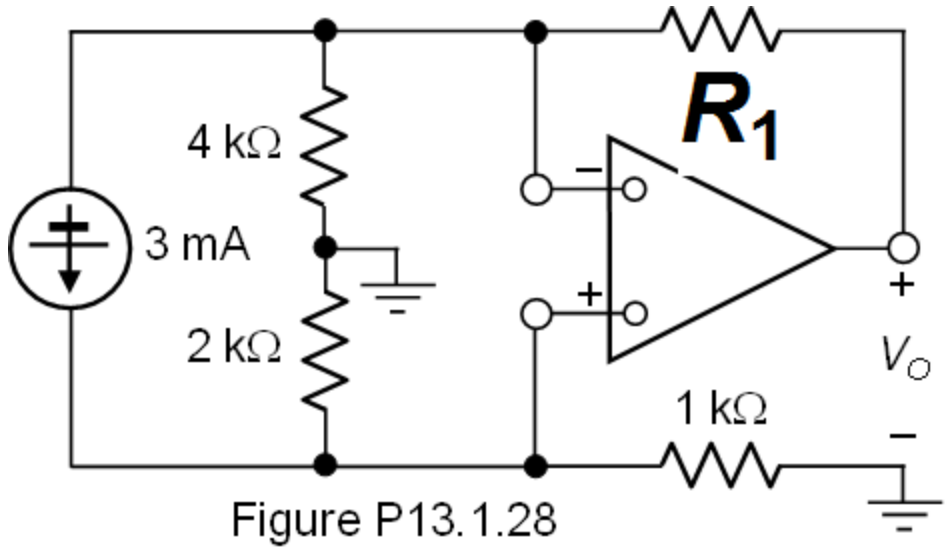

Figure P13.1.28

P13.2.19 Determine V_O in Figure P13.2.19.

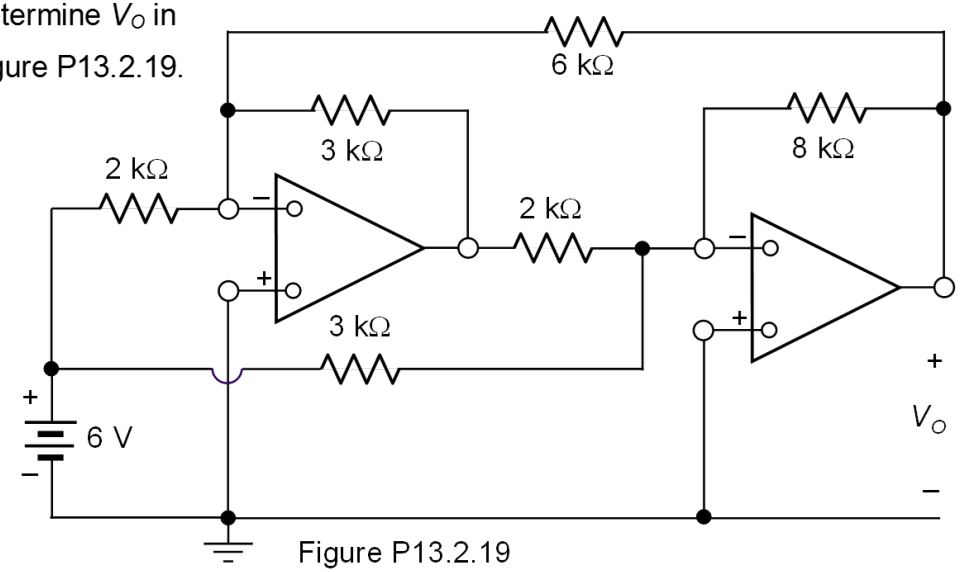

Figure P13.2.19