2a.1 • **undefined** • **undefined** • **xBH0y2JT**

What difference does a component's tolerance make?

2a.1 • **undefined** • **undefined** • **RzYcCfgi**

What does a 10MHz crystal with 10ppm tolerance mean?

2a.1 • **undefined** • **undefined** • **PoFykgkR**

What do the colours brown, red, gold and silver mean on a resistor as the last band, in terms of tolerance?

2a.1 • **undefined** • **undefined** • **Bb7MwMw9**

Think about some of the ways that the effects of tolerance can be adjusted.

2d.1 • Capacitor • 000 • kEyJnEIw

What factors influence the capacitance of a capacitor, and what is the formula?

2d.1 • Capacitor • 010 • WUxQUz1C

What happens to capacitance if distance between plates doubles?

2d.1 • Capacitor • 020 • iOXUtAs9

What happens to capacitance if plate area doubles?

2d.1 • Capacitor • 030 • snGJZdyD

Is the formula for Capacitance on the EX309 sheet, and do you know how to decode its incorrect printing?

2d.1 • Coulomb • 000 • erA72lhb

What is the unit for the quantity of electricity called, and how is it defined?

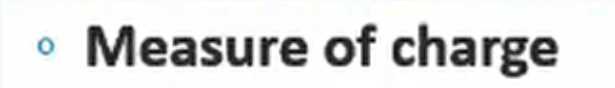
2d.1 • Coulomb • 000 • PzSmDiD6

What is the formula for stored charge on a capacitor?

2d.1 • Coulomb • 000 • UHIISN1F

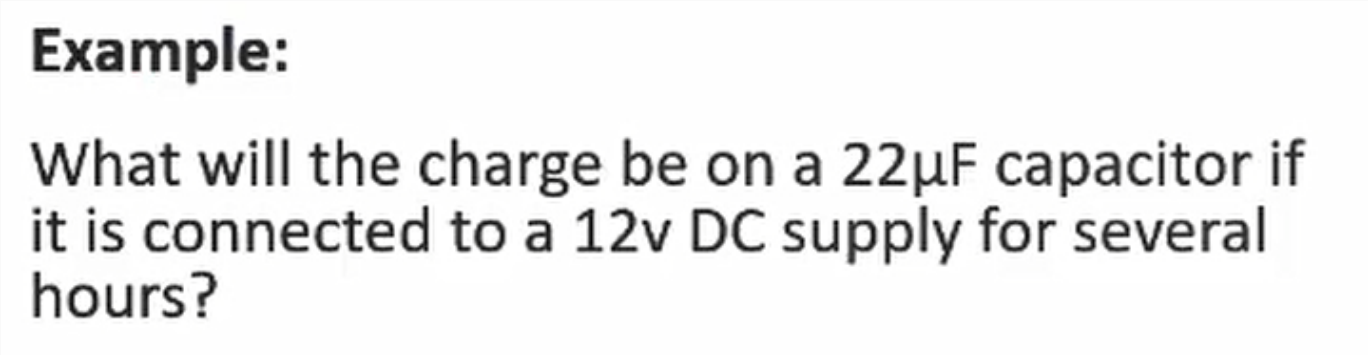
REVISION: Q as a measure of CHARGE, the COULOMB

What is the definition of Q both in a wire, and on a capacitor?



2d.1 • Coulomb • 000 • BHYJT6GX

REVISION: What will the charge be on a $22\mu F$ capacitor, if it is connected to a 12 DC supply for several hours?



2d.2 • Dielectrics • 000 • jP8IiNpC

What sort of materials are used to make dielectrics, which ones tend to be lossy, and what causes losses to increase?

2d.2 • Dielectrics • 000 • 8t67KqZJ

Which capacitors are low-loss, stable and good for RF, normally around the low pf range?

2d.3 • Capacitor • 000 • E2bs6PI2

What happens to a capacitor when its safe working voltage, or breakdown voltage, is exceeded?

2d.3 • Capacitor • 000 • xLIq4u_V

How do you identify the safe working voltage of a capacitor?

2d.4 • Inductor • 000 • FOUzLyD4

Revision mode: the inductor. Give a brief summary of what it does, what affects its value and the unit. Check formulas for inductors in series and in parallel.

2d.4 • Inductor • 000 • OZVRnz0L

what does self inductance mean and what is back EMF?

2d.4 • **Inductor** • • **Djmqkm8X**

In what direction are the magnetic force when current flows through a wire?

2d.7 • **Time constant** • **000** • **PDGB_68f**

Why is there a time constant for inductors and capacitors

2d.7 • Time constant • 000 • DGnw4qzj

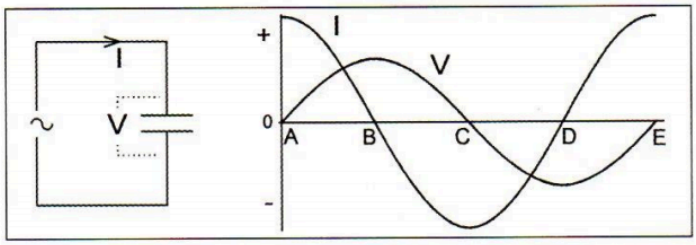
What happens after one time constant has elapsed in an RL circuit, and also 5 time constants?

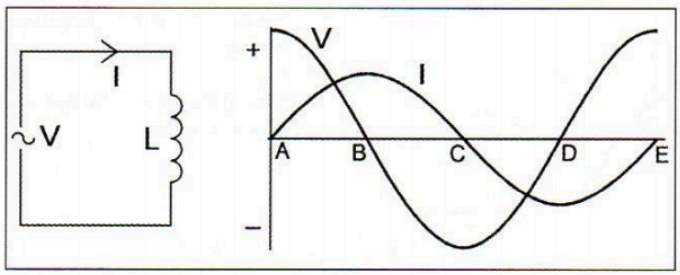
2d.7 • Time constant • 000 • jJL0xDVW

What happens after one time constant has elapsed in an RC circuit, and also 5 time constants?

2e.3 • Phase difference • 000 • K3f1UiBo

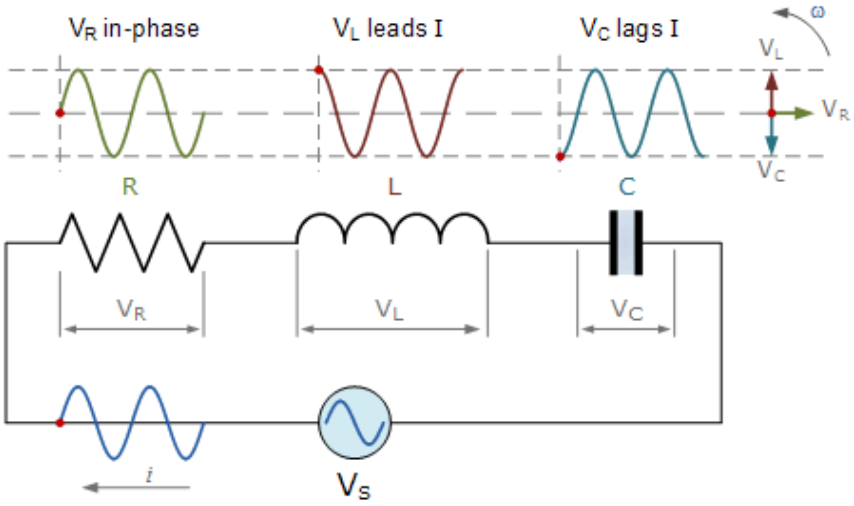
From the intermediate course, we know that in circuits with pure Capacitance or pure Inductance, there is a 90 degree phase difference between voltage and current. Now we need to know which leads which...





2e.3 • Phase difference • 010 • UHcSkdoI

What is the phasor diagram for voltage in an AC series circuit consisting of a resistor, an inductor and a capacitor?



2e.3 • Capacitive reactance • 000 • OB47yhKe

What is the formula for the reactance of a capacitor, what does the graph of Capacitive Reactance vs frequency look like, and can you find it in EX309?

2e.3 • Inductive reactance • 000 • cFx7kOmd

What is the formula for the reactance of an inductor, what does the graph of Reactive Reactance vs frequency look like, and can you find it in EX309?

2e.3 • Hints and tips • 900 • BCHjk6FS

How do you get 'pi' to appear on your calculator?

2e.3 • Inductive reactance • 200 • 5lC4HSSk

Calculator practice: calculate the INDUCTIVE REACTANCE of a $10\mu H$ inductor at 7MHz. Hint: use the REPLAY button and its arrows to check the numbers have been entered properly.

2e.3 • Capacitive reactance • 000 • t7V6D5iL

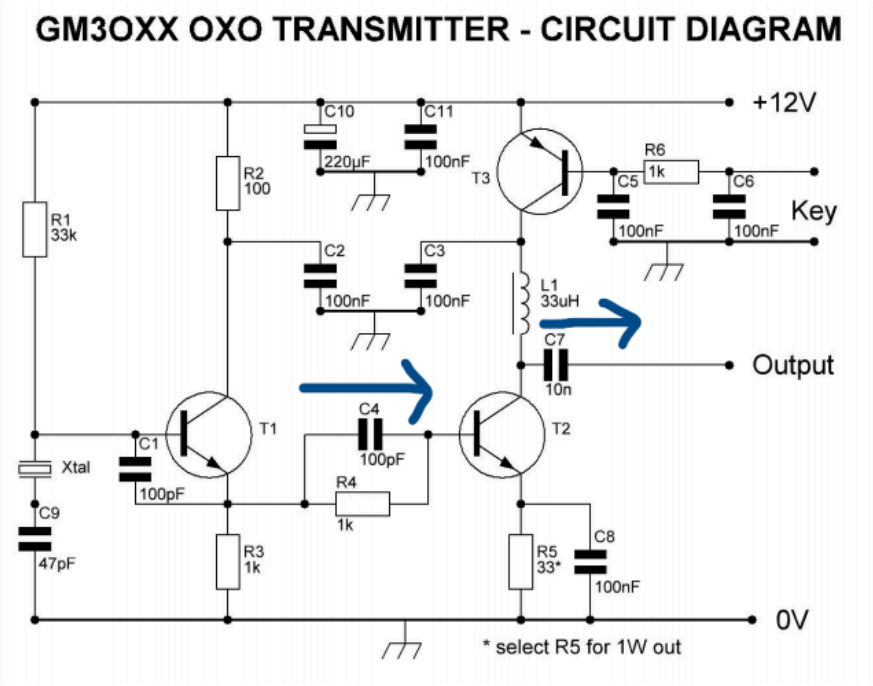
Calculator practice: calculate the CAPACITIVE REACTANCE of a 22pF capacitor at 10MHz. Hint: use the brackets!

2e.3 • Capacitive reactance • 000 • MlZ9XKFh

If the CAPACITIVE REACTANCE of a 22pF capacitor is 723 Ω, what is the frequency?

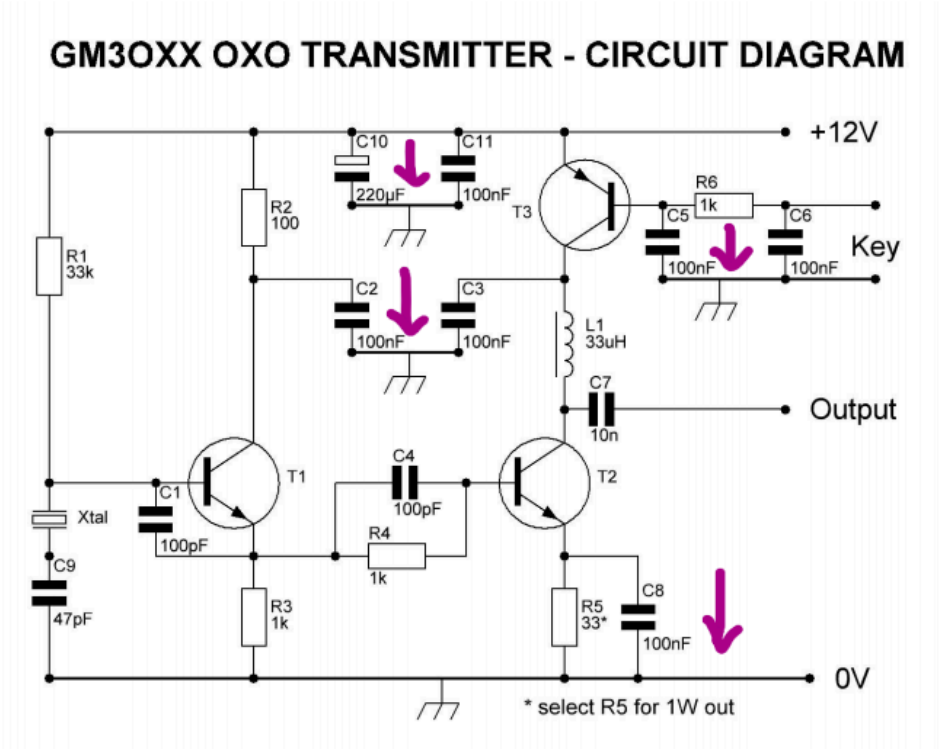
2e.4 • Capacitor uses • 000 • XHrZd8SU

How are capacitors being used in this diagram? Hint: look at the arrows. It won't have the description or the arrows on the real thing.



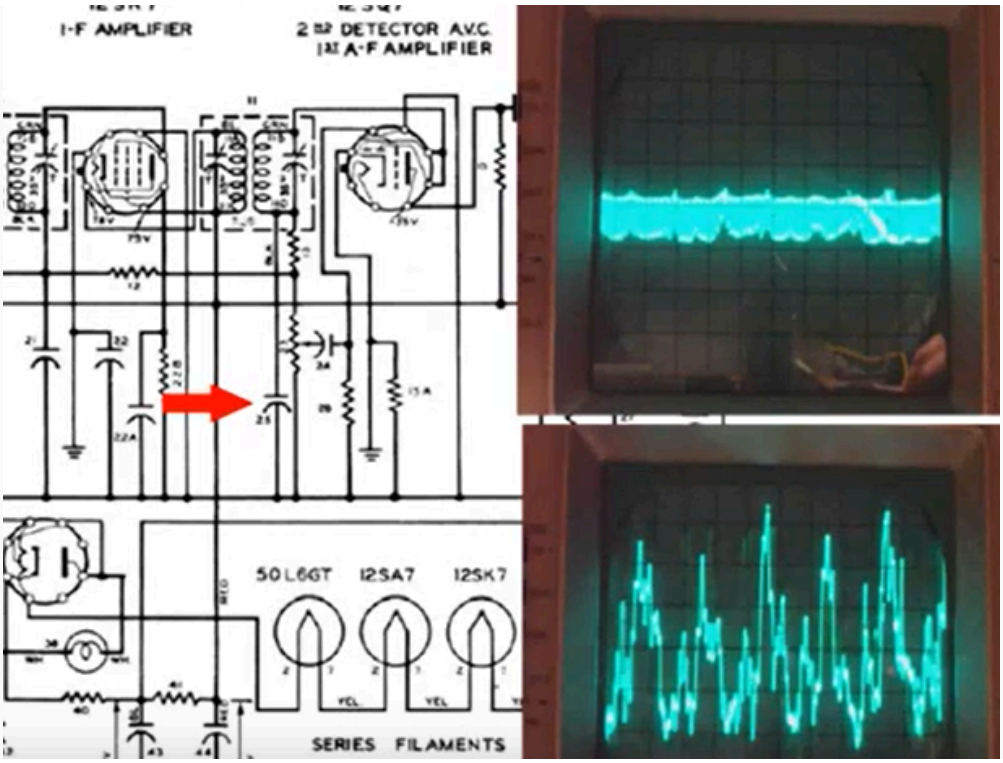
2e.4 • Capacitor uses • 000 • GBtkMjhk

What is happening in this diagram?



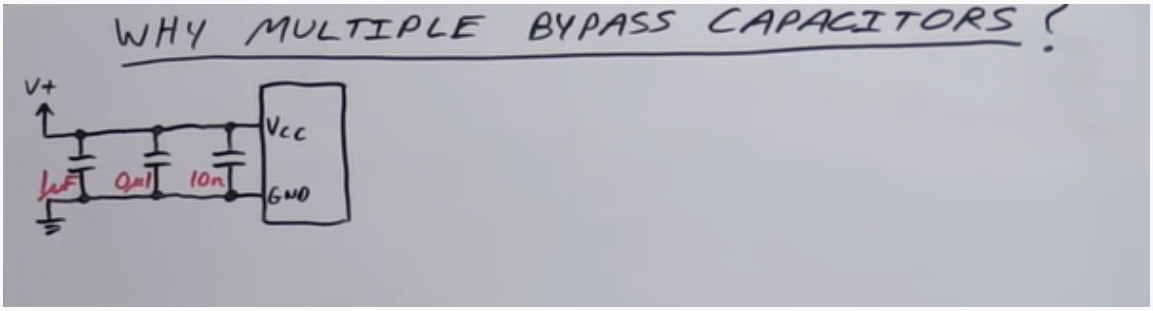
2e.4 • Capacitor uses • 000 • UOpfSJqm

What is RF bypass?



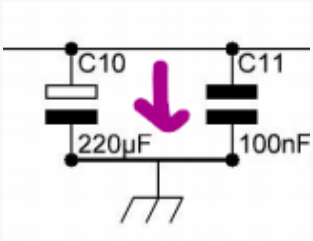
2e.4 • Capacitor uses • 000 • V3fn3Qol

Why do we use multiple bypass capacitors on a power supply? Values like $1\mu F$, 100nF, 10nF and 1nF are common and actually 3-4 may be used to take signals down to earth.



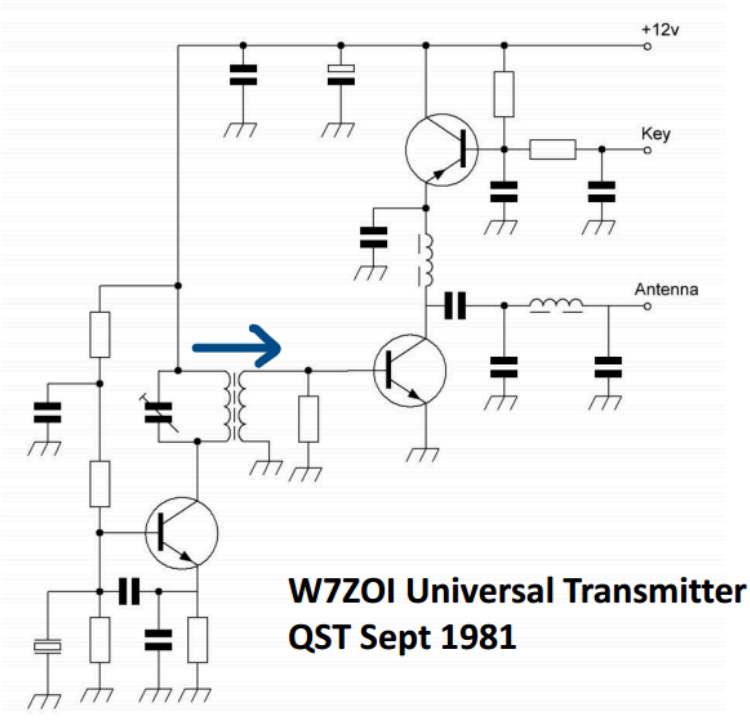
2e.4 • Capacitor uses • 000 • a52zD3NT

Here is a small piece of circuit with the capacitor connected between a 12V DC power supply and earth. Why would it be here?



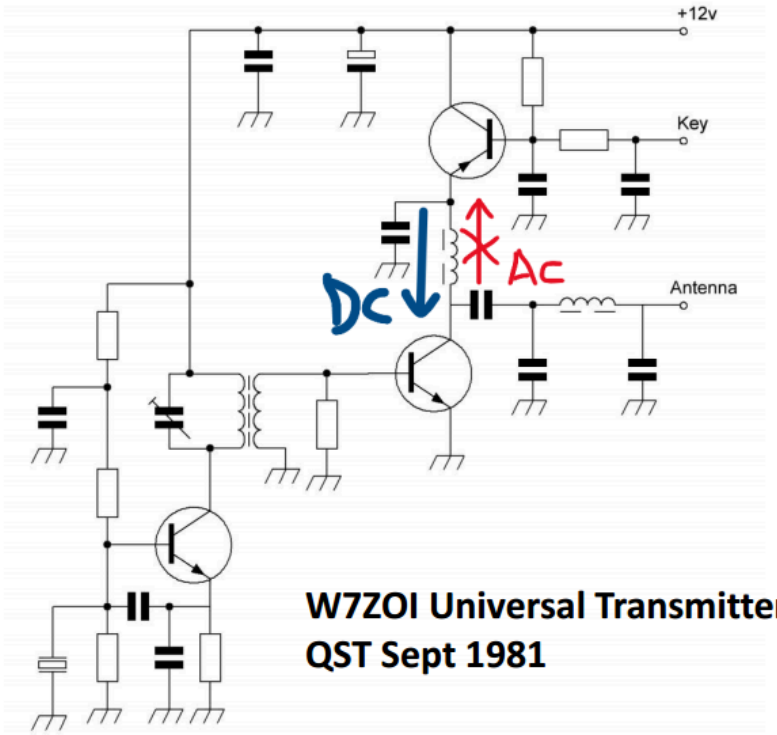
2e.5 • Inductor uses • 000 • x8Fj1aqF

How are inductors used in this diagram?



2e.5 • Inductor uses • 000 • -ybShg7h

How are inductors used in this diagram?



2e.6 • undefined • undefined • 7YKuHqny

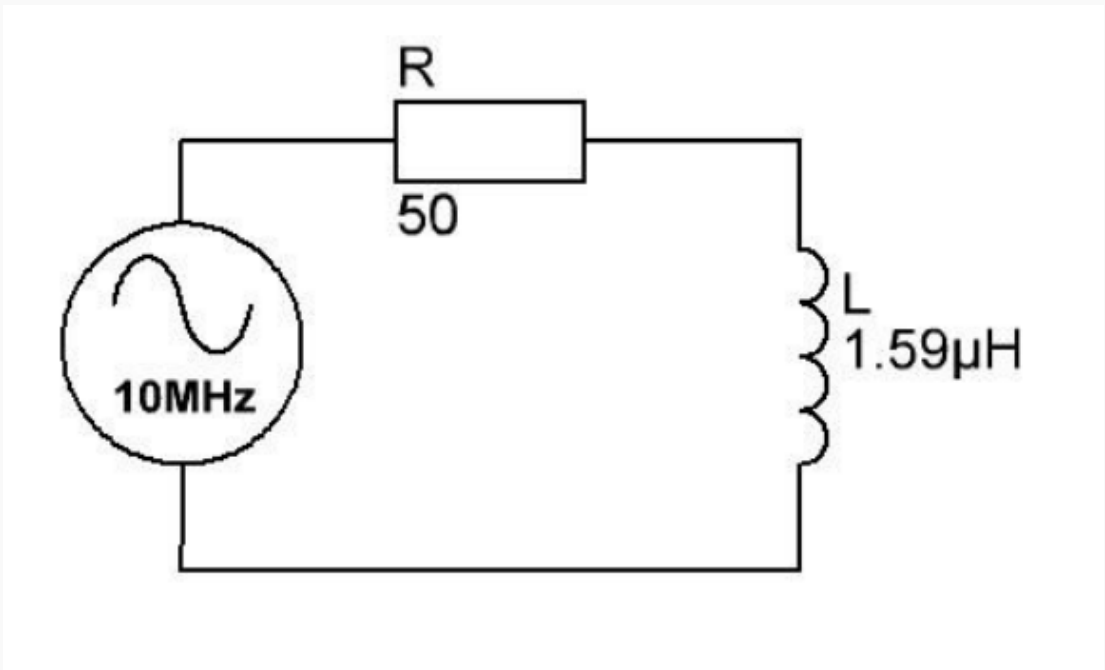
How is Impedance calculated in an RC or RL circuit?

2e.6 • undefined • undefined • Kd_v9eaD

What is the visual representation of Impedance calculated in an RC or RL circuit?

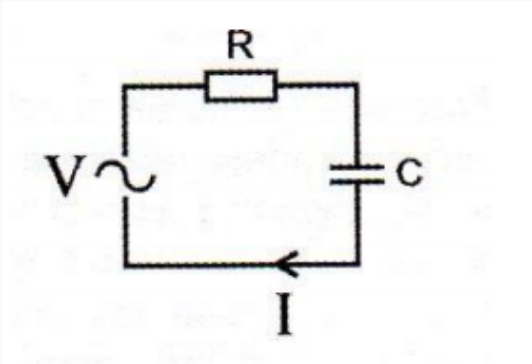
2e.6 • undefined • undefined • WM6LX6G-

What is the impedance of the circuit in the diagram?



2e.6 • undefined • undefined • D_qymJnT

What is the impedance of the circuit in the diagram?



2e.6 • undefined • undefined • nODdsBIO

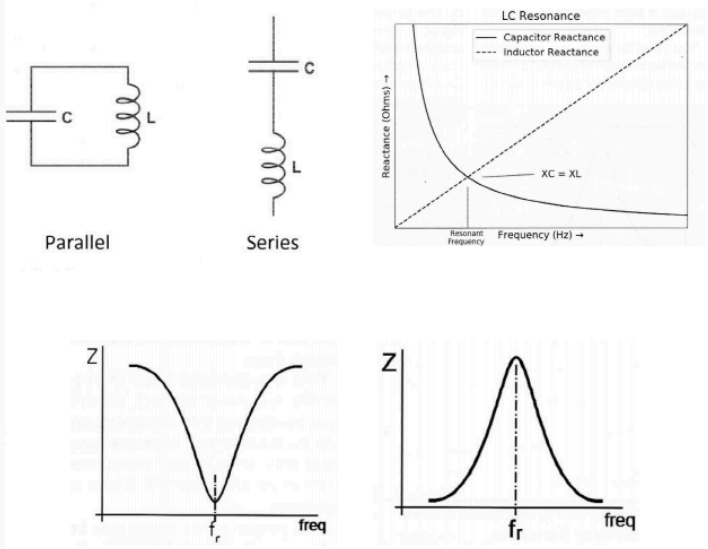
Really nasty question

Really nasty question gives you component values and supply voltage – what is V across C

- Need to work out X
- Use X and R to work out Z
- Use Z to work out I
- Use I and X to work out V
- *Worked example in Weekly Instructions*

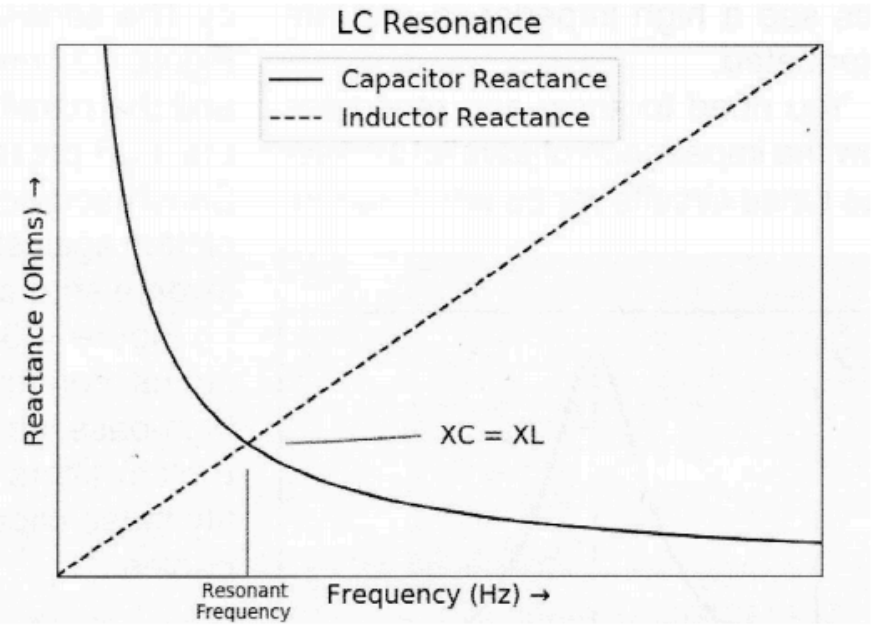
2h.1 • undefined • undefined • -cve6QhE

Recap on tuned circuits. What do you remember? Which is the acceptor circuit, and which is the rejector circuit? I always remember PARALLEL for PEAK Impedance.



2h.1 • undefined • undefined • 80kswhtQ

What is the resonant frequency formula that applies to both series and parallel tuned circuits?



2h.1 • undefined • undefined • `Icrs9YHB`

How do you transpose the resonant frequency formula to solve for C or L?

2h.1 • undefined • undefined • `YlWQ4xfJ`

Calculate resonant freqency of 22pf capacitor with $10\mu H$ inductor

2h.2 • undefined • undefined • `s7y_uZJc`

Summarise what you know about crystals and how they're used.

2h.2 • undefined • undefined • `0S0usOAm`

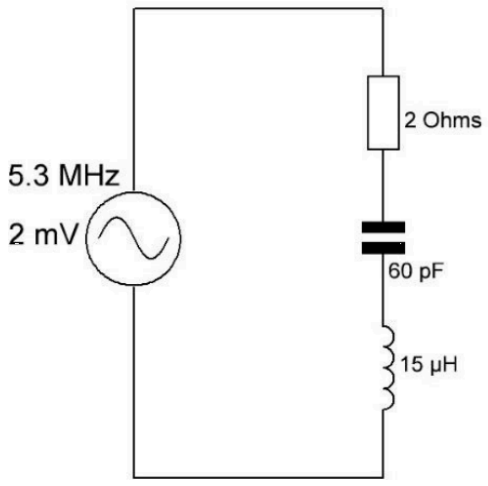
Identify a circuit with crystals in it

2h.2 • undefined • undefined • `knldQzuu`

What does the specification of a crystal's performance look like?

2h.4 • undefined • undefined • `hQ5vWwHT`

In this circuit the resonant frequency is 5.3MHz and there is an RF supply of just 2mV across the series circuit. Q MAGNIFICATION hinges on the fact that when a series tuned circuit is at resonance, the reactances X_L and X_C are equal and opposite, so they cancel each other.



2h.4 • undefined • undefined • TuDkF5TC

voltages and circulating currents in tuned circuits can be very high...

2h.4 • undefined • undefined • bSZoHasf

Apply the formula for Q factor given circuit component values...

2h.4 • undefined • undefined • ck-q12VL

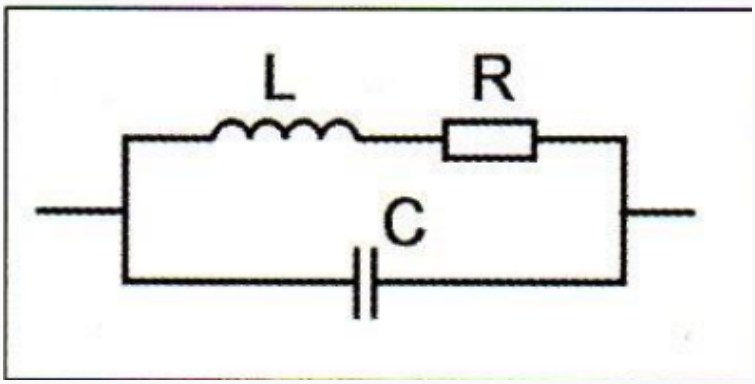
Recall the definition of the half power point of resonance curves...

2h.4 • undefined • undefined • pnYosChc

Apply the equation for Q given the resonant frequency and the half power points on the resonance curve...

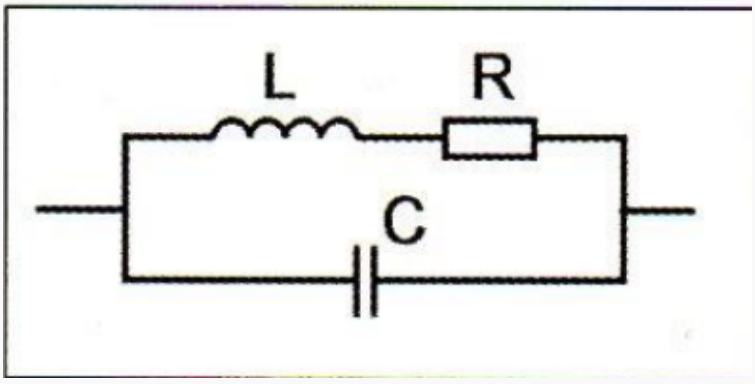
2h.5 • undefined • undefined • gsL6QJgR

Understand the meaning of dynamic resistance, R_D...



2h.5 • undefined • undefined • undefined

In this example, the inductor is $5\mu H$, the capacitor is 200pF and the resistor is 0.5Ω. Now calculate R_D, the dynamic resistance:



7a.1 • undefined • undefined • `szDTJzZf`

What is working split?

7a.8 • undefined • undefined • `zxLUWGob`

What does the Licence say about testing your radio equipment?

7b.1 • undefined • undefined • NxaFs7Fw

Which band plans do you need to be familiar with for the Full exam?

7b.1 • undefined • undefined • YDDrv0Rc

Are you familiar with the 5MHz (60m) band plan?

7b.1 • **undefined** • **undefined** • `6b_9-GFQ`

Are you familiar with the 5MHz (60m) notes to the band plan?

7b.1 • **undefined** • **undefined** • `I1LmRd3r`

Are you familiar with the 472kHz (600m) band plan?

7b.1 • undefined • undefined • ZR857NP1

Are you familiar with the 472kHz (600m) notes to the band plan?

7b.1 • undefined • undefined • HqLuZVQJ

Are you familiar with the 472kHz (600m) notes to the band plan, now in text you can actually read without a microscope?

7b.1 • undefined • undefined • Ma9Ws_fK

Are you familiar with part one of the notes to the band plans?

Notes to the bandplans

7b.1 • undefined • undefined • 7Ny8NuJE

Are you familiar with part two of the notes to the band plans?

Notes to the bandplans