* Chose the correct answer of the following questions.

1. When we close the switch of the circuit shown in the figure, the electric current and the potential difference will oscillate through the circuit, which physical quantity represented by axis Y in the graph that related to the same circuit?



Time



𝑦

* 1. The charge between the capacitor plates.
  2. The current intensity that passes through the circuit.
  3. The energy stored in the electric field,
  4. The energy stored in the magnetic field.

1. What is the magnetic energy stored in a coil with 0.3 𝒎𝑯 inductance when 2.3 A DC current passes through it?

* 1. 1.5 J

Ub=1\2 L i^2=

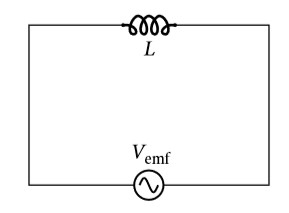
1/2(0.3x10^-3)(2.3)^2=

7.9x10^-4 J

* 1. 0.79 J
  2. 3.6 J
  3. Zero

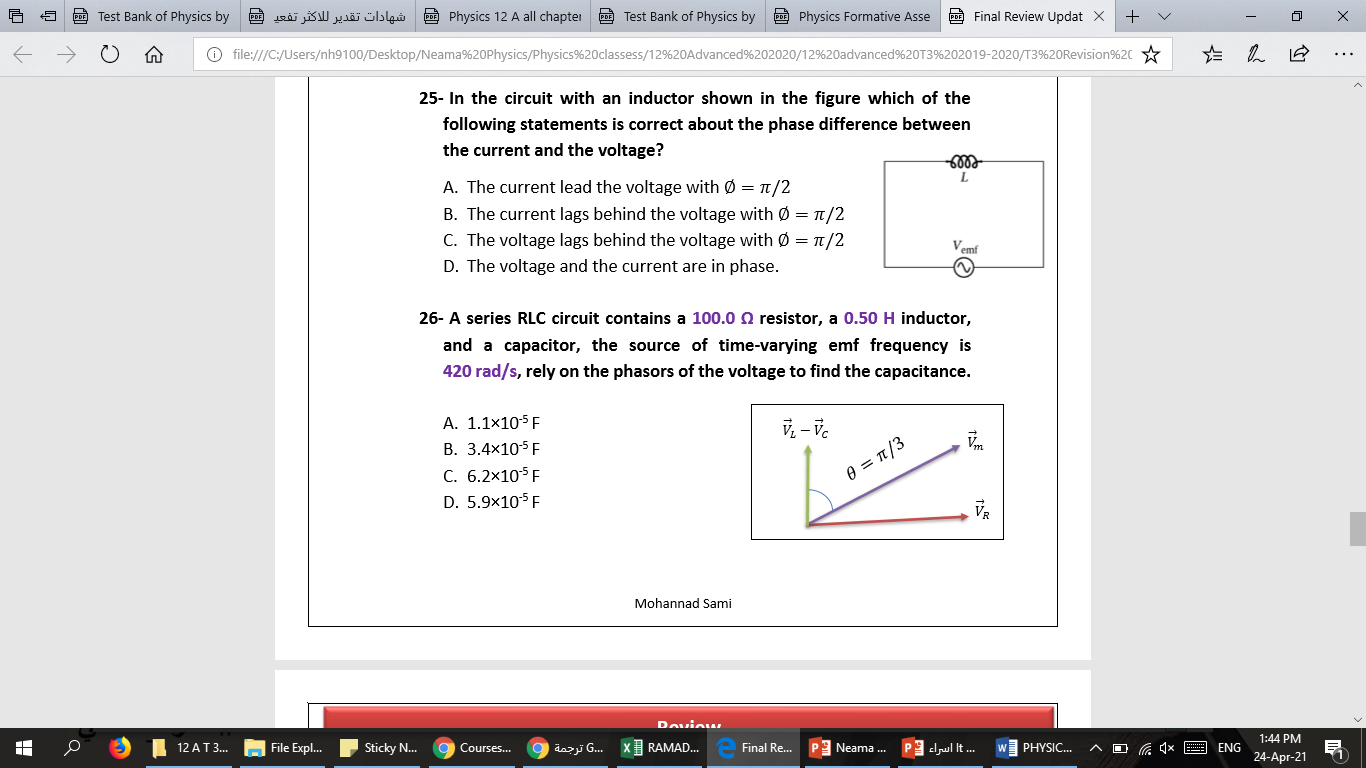
1. When does the current reach its maximum value In the LC circuit shown in the figure?



1. When the capacitor is fully charge.
2. When the capacitor is empty.
3. When the energy stored in the circuit is zero.
4. When the energy stored as a magnetic field is zero.
5. In the circuit with an inductor shown in the figure which of the following statements is correct about the phase difference between the current and the voltage?

* 1. The current lead the voltage with ∅ = 𝜋/2
  2. The current lags behind the voltage with ∅ = 𝜋/2
  3. The voltage lags behind the voltage with ∅ = 𝜋/2
  4. The voltage and the current are in phase.

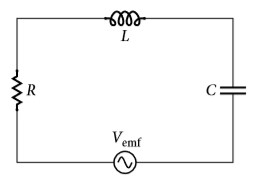
1. A series RLC circuit contains a 100.0 Ω resistor, a 0.50 H inductor, and a capacitor, the source of time-varying emf frequency is 420 rad/s, rely on the phasors of the voltage to find the capacitance.



* 1. 1.1×10-5 F
  2. 3.4×10-5 F
  3. 6.2×10-5 F
  4. 5.9×10-5 F

1. From the series RLC circuit shown in the figure find the following:

L=12 𝒎𝑯



𝑽

𝒓𝒎𝒔

=120

V

R= 20 Ω C= 6.2 µF

𝝎=315 rad/s

1. The inductive reactance.

Xl=WL

Xl=(315)(12x10^-3)=3.78



The capacitive reactance.

Xc=1/Wc

Xc=1/(315)(6.2x10^-6)=512.03



1. جذر نوني - ويكيبيدياThe impedance



Z=

R^2 + (Xl-Xc)^2

Z= 508.64



1. The phase constant

@=tan^-1(Xl-Xc/R)

@=Tan^-1(3.78 - 512.03)



1. The current in the circuit

I=V/Z

120/508.64=0.24 A

1. The voltage through the capacitor

Vc=iXo

Vc=(0.24)(512.03)=122.88 v