Basic Electrical Science

Assignment - 02

1. For a R-L series circuit excited by a DC source of 60 V, considering R = 30 Ω and L = 15 H; Plot the following graphs in an **.xls sheet**:
   - Series current through the circuit wrt time (in sec)
   - Voltage across Inductor wrt time (in sec)
   - Voltage across Resistor wrt time (in sec)
   - Power absorbed by the Inductor wrt time (in sec)
   - Power dissipated by the Resistor wrt time (in sec)

   Consider the time variation from 0 - 10 Sec in steps of 0.25 sec.

   Check the results for time constant '**τ**' = 0.25, 0.5, 1, 2

2. For a R-C series circuit excited by a DC source of 60 V, considering R = 30 Ω and C = 0.1 F; Plot the following graphs in an **.xls sheet**:
   - Series current through the circuit wrt time (in sec)
   - Voltage across Capacitor wrt time (in sec)
   - Voltage across Resistor wrt time (in sec)
   - Power absorbed by the Capacitor wrt time (in sec)
   - Power dissipated by the Resistor wrt time (in sec)

   Consider the time variation from 0 - 15 Sec in steps of 0.25 sec.

   Check the results for time constant '**τ**' = 2, 3, 4, 5

3. For a R-L series circuit excited by a DC source, compute
   - the time at which Power across the Inductor is maximum
   - Value of maximum P across the Inductor

4. For a R-C series circuit excited by a DC source, compute
   - the time at which Power across the Capacitor is maximum
   - Value of maximum P across the Capacitor

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