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| **A Radio Tuning Circuit** |
| A radio can be tuned into a particular station frequency by adjusting the capacitance in an *L-C* circuit. Suppose that the minimum capacitance of a variable capacitor in a radio is 4.18 pF.   |  |  | | --- | --- | | Part A |  | | What is the inductance Lof a coil connected to this capacitor if the oscillation frequency of the *L*-*C* circuit is 1.50 MHz, corresponding to one end of the AM radio broadcast band, when the capacitor is set to its minimum capacitance?   |  |  | | --- | --- | | Hint A.1 | **Frequency of an *L-C* circuit** | | ***Hint not displayed*** | | | Hint A.2 | **Angular frequency and cycles per second** | | ***Hint not displayed*** | |   **Express your answer in henrys to three significant figures.**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | ANSWER: | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | L = | ***Answer not displayed*** | \rm H |  | | | | | Part B |  | | The frequency at the other end of the broadcast band is 0.549 MHz. What is the maximum capacitance C_maxof the capacitor if the oscillation frequency is adjustable over the range of the broadcast band?   |  |  | | --- | --- | | Hint B.1 | **Frequency of an L-C circuit** | | ***Hint not displayed*** | | | Hint B.2 | **Angular frequency and cycles per second** | | ***Hint not displayed*** | |   **Express your answer in farads to three significant figures.**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | ANSWER: | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | C_max = | ***Answer not displayed*** | \rm F |  | | | | |

Please make sure you answer in the right unit required in the problem. Thanks