2.SELECTIVITY OF TUNED CIRCUITS FREQUENCY RESPONSE

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Number of Observations : 19

SI No	Record of Observations	Values	Units
1	Resistance (R)	50	Ω
2	Capacitance (C)	0.1	μF
3	Inductance (L)	10	mH

Series Circuit				Parallel Circuit		
SI No.	Frequency 'f' in KHz	Current 'I' in mA		SI No.	Frequency 'f' in KHz	Current 'I' in mA
1	1	4.05		1	1	10.94
2	2	7		2	2	10.08
3	3	9.6		3	3	7.93
4	3.8	10.38		4	3.8	4.68
5	3.9	10.4		5	3.9	4.28
6	4	10.42		6	4	3.98
7	4.1	10.44		7	4.1	3.44
8	4.2	10.45		8	4.2	3.25
9	4.3	10.51		9	4.3	3.04
10	4.4	10.5		10	4.4	3.16
11	4.5	10.46		11	4.5	3.24
12	4.6	10.43		12	4.6	3.69
13	4.7	10.41		13	4.7	3.98
14	5	10.31		14	5	4.45
15	6	9.52		15	6	7.52
16	7	8.68		16	7	9.07
17	8	7.25		17	8	9.89
18	9	7.15		18	9	10.47
19	10	6.72		19	10	10.6

Series Circuit Graph :

Currrent (mA)

Frequency f in KHz
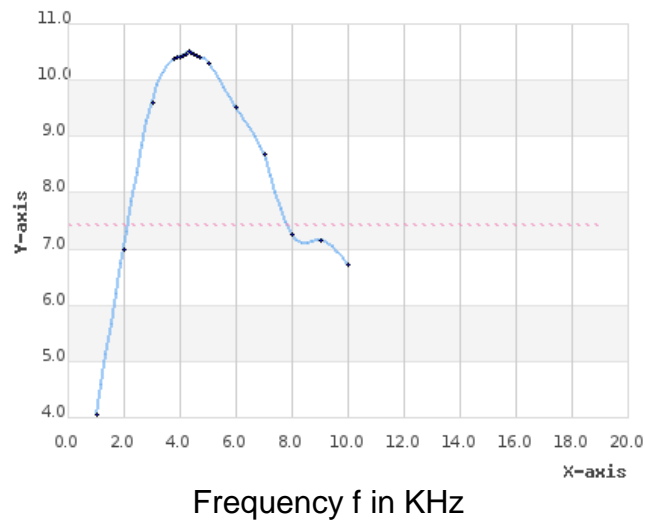
Calculation

Series resonance frequency fr	4.3	KHz
Imax	10.51	mA
Band Width = (fb - fa)	1.3	Hz

Parallel Circuit Graph :

Currrent (mA)
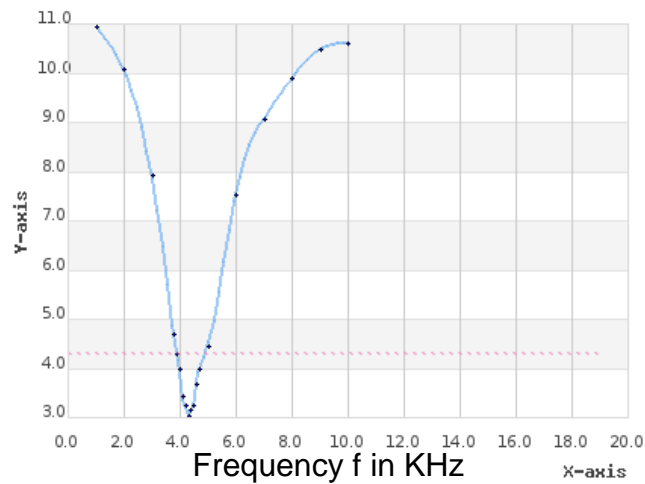
Frequency f in KHz

Calculation

Parallel resonance frequency fr	4.3	KHz
Imax	3.04	mA
Band Width = (fb - fa)	5.7	Hz

Tabulation

Type Of Resonance	R in Ω	L in mH	C in µF	fr = 1/2 π $\sqrt{1/LC}$ in KHz	fr (experimental) in KHz
Series Resonance	50	10	0.1	5.03	4.3
Parallel Resonance	50	10	0.1	5.03	4.3

Conclusion

The resonance frequency, quality factor and band width of a given LCR
circuit which were connected in series and parallel were calculated experimentally and then resonance frequency
was compared with the theoretically calculated value and experimentally
obtained value.