Student 1 – Name and surname Student 2 – Name and surname Group Date/Time Table

Worksheet M2 rev 1

1. Measuring the cutoff frequency of the low pass filter

a) measured values : $R = C =$	$oxed{U_{0,in}} = oxed{U_{0,out}} =$
$f_{-3dB} = f_{-3dB,th} =$	$ \left \frac{U_{0,in}}{U_{0,out}} \right _{measured} = $
	$\left egin{array}{c} U_{0,in} \ U_{0,out} \end{array} ight _{theoretical} =$

2. The measurement of the magnitude - frequency transfer function

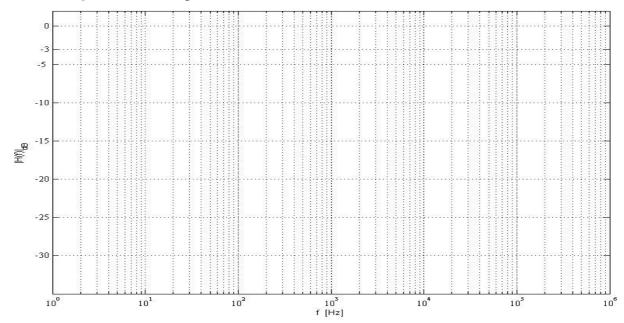
	$\frac{f_{-3\text{dB}}}{10}$	$\frac{f_{-3\mathrm{dB}}}{4}$	$\frac{f_{-3\mathrm{dB}}}{\sqrt{3}}$	$f_{-3 m dB}$	$\sqrt{3}f_{-3\mathrm{dB}}$	$4f_{-3\mathrm{dB}}$	$8f_{-3\mathrm{dB}}$	$10f_{-3\mathrm{dB}}$	$40f_{-3\mathrm{dB}}$
Frequency (kHz)									
$U_iig _{\mathrm{dB}}$									
$U_0ig _{\mathrm{dB}}$									
$ H(\omega) _{dB}$									

b) m_1 = dB/decade m_2 = dB/octave

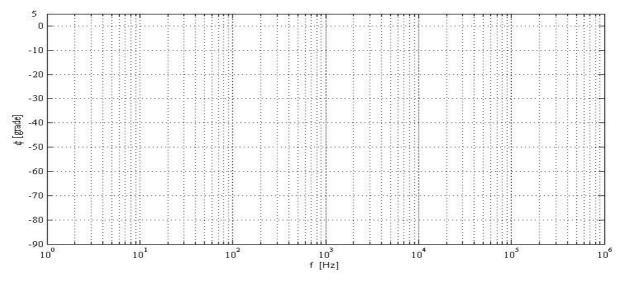
3. The measurement of the phase transfer function

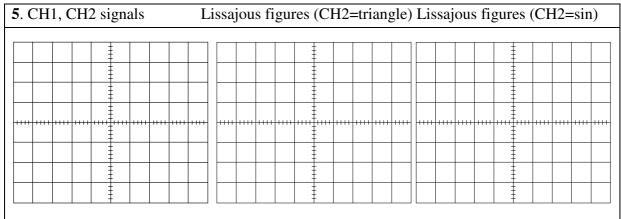
	The ellipse method				The ref. signal synchronization method								
f	f [kHz]	$oldsymbol{arphi}_{th}$ $egin{bmatrix} \circ \ \end{bmatrix}$	DD'	CC'	$arphi_e$	$arepsilon_1$	t_0	Т	$oldsymbol{arphi}_{synch}$	$oldsymbol{arepsilon}_2$	\mathcal{E}_{t_0}	\mathcal{E}_{T}	\mathcal{E}_{arphi}
$f_{-3dB}/10$													
$f_{-3\mathrm{dB}}/4$													
$f_{-3\text{dB}}/10$ $f_{-3\text{dB}}/4$ $f_{-3\text{dB}}/\sqrt{3}$													
$f_{-3 m dB}$													
$\sqrt{3}f_{-3\mathrm{dB}}$													
$4f_{-3\mathrm{dB}}$													
$10f_{-3\mathrm{dB}}$													

4. **Bode diagram** for the amplitude transfer function



Phase transfer function (ellipse method).





Explain the role of the circuit:

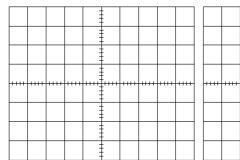
$$\mathbf{6.} \qquad \qquad R_0 = \qquad \qquad f_s' = \qquad \qquad C_i =$$

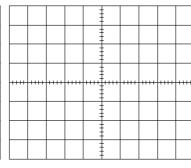
$$f_{s}'=$$

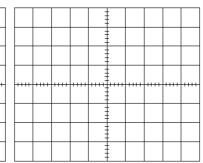
7a) compensated attenuator 7c) overcompensated



7d) undercompensated







7b)
$$C_a =$$

calculated overshoot =