LABORATORY OF ANALOG LINEAR CIRCUITS

Exercise: **4b**		Team: 1. 2. 3.
Temat: Basic configurations of MOS transistor		
Data of execution of the exercise		Date of delivery of the report

2.1. Measurement of the upper and lower cut-off frequencies f_{L3dB} and f_{H3dB} and the input and output resistances R_{in} and R_{out} of the CS, CG and CD circuits, $K_u = V_{wy}/V_{we}$ V_{wy} = 600 mV; for CS and CG circuits: $f_1 = 50\,kHz$, for the CD circuit: $f_1 = 150\,kHz$ and V_{we} = 300 mV

Układ		A: CS	B: CG	C: CD
V_{we}	$[mV]$			**300**
V_{wy}	$[mV]$	**600**	**600**	**-**
f_{L3dB}, $K_u(f_{L3dB}) = 0.707 \cdot K_u(f_1)$	$[kHz]$			
f_{H3dB}, $K_u(f_{H3dB}) = 0.707 \cdot K_u(f_1)$	$[kHz]$			
$f_0 = \sqrt{f_{L3dB} \cdot f_{H3dB}}$	$[kHz]$			
$K_u(f_0)$	$[V/V]$			
R_{in}: V_{wy}'	$[mV]$			
R_{out}: $V_{wy'}$	$[mV]$			

2.2. Measurement of the amplitude frequency characteristic for: CS, CG and CD, $K_u = V_{wy}/V_{we}$, V_{we} as before

A: CS				B: CG				C: CD			
f	V_{wy}	K_u	$20 \cdot \log\lvert K_u\rvert$	f	V_{wy}	K_u	$20 \cdot \log\lvert K_u\rvert$	f	V_{wy}	K_u	$20 \cdot \log\lvert K_u\rvert$
$[kHz]$	$[mV]$	$[V/V]$		$[kHz]$	$[mV]$	$[V/V]$		$[kHz]$	$[mV]$	$[V/V]$	
40 Hz				40 Hz				40 Hz			
70 Hz				70 Hz				70 Hz			
100 Hz				100 Hz				100 Hz			
200 Hz				200 Hz				200 Hz			
400 Hz				400 Hz				400 Hz			
10.0				10.0				10.0			
50.0				50.0				150.0			
200.0				200.0				1 MHz			
300.0				300.0				1.2 MHz			
400.0				400.0				1.4 MHz			
500.0				500.0				1.5 MHz			
600.0				600.0				1.7 MHz			

3. Description of the results

1) Plot the measured characteristics on the individual charts. The vertical axis should be gain expressed in logarythmic measure, ie. $20\log|K_u|$, the horizontal axis (signal frequency) should be logarythmic.

2) Calculate the small signal gain, input and output resistance using the equation from the paper instruction.

For all measurements place your own conclusions and observations.