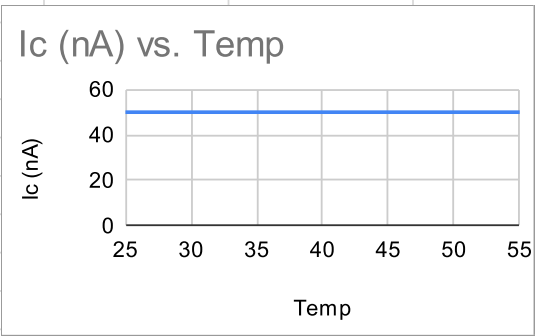
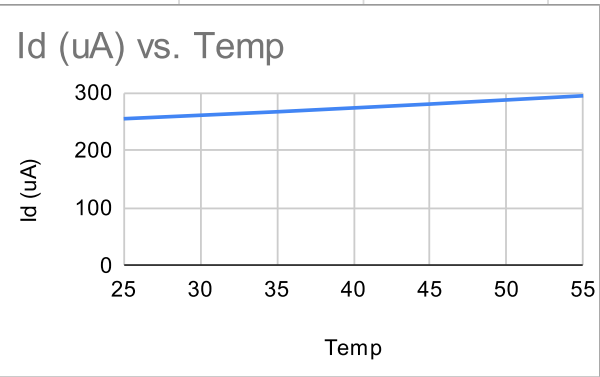


Q1 (a)		
Temp	Ic (uA)	
25	50.000025	
35	50.000048	
45	50.00009	
55	50.00017	



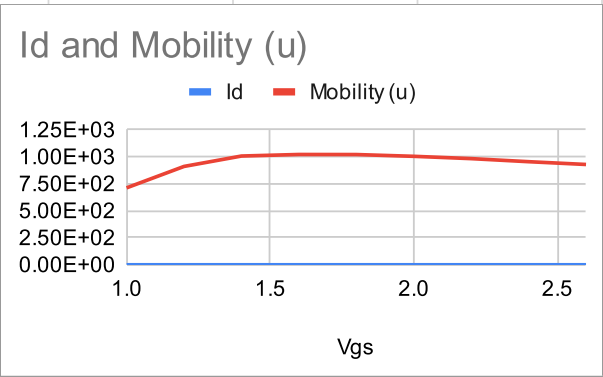
Increasing Ic with increase in temperature

Q1 (b)		
Temp	Id (uA)	
25	254.63	
35	266.67	
45	280.09	
55	294.44	



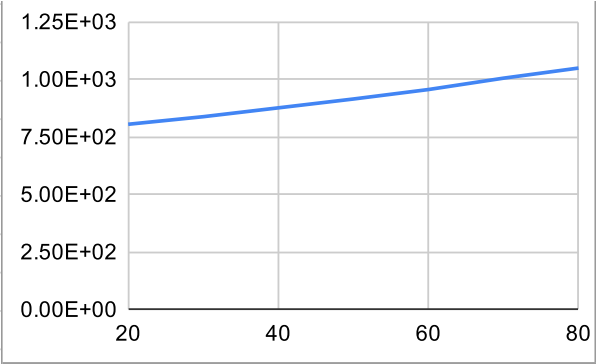
Q1 (c)		
Toff		
NMOS	5ns	
BJT	8ns	

Q2 (a)			
Vgs	Id	Mobility (u)	
1	2.31E-05	7.13E+02	
1.2	4.43E-05	9.12E+02	
1.4	6.53E-05	1.01E+03	
1.6	8.28E-05	1.02E+03	
1.8	9.93E-05	1.02E+03	
2	1.14E-04	1.01E+03	
2.2	1.28E-04	9.84E+02	
2.4	1.39E-04	9.55E+02	
2.6	1.51E-04	9.30E+02	

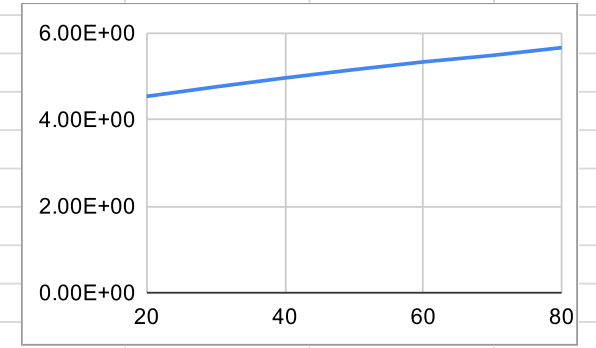


Q2 (b)

Case 1			
Vgd	Id	Mobility (u)	Temperature
1.5	5.87E-05	8.05E+02	20
1.5	6.11E-05	8.38E+02	30
1.5	6.39E-05	8.77E+02	40
1.5	6.67E-05	9.15E+02	50
1.5	6.97E-05	9.56E+02	60
1.5	7.33E-05	1.01E+03	70
1.5	7.65E-05	1.05E+03	80



Case 2			
Vgd	Id	Mobility (u)	Temperature
1.5	3.31E-07	4.54E+00	20
1.5	3.47E-07	4.76E+00	30
1.5	3.62E-07	4.97E+00	40
1.5	3.76E-07	5.16E+00	50
1.5	3.89E-07	5.34E+00	60
1.5	4.00E-07	5.49E+00	70
1.5	4.13E-07	5.67E+00	80



Q2 (c)			
125C			
x0	x1	y0	y1
0.4377	0.3555	-14.0741	-15.4568
SS	16.82116788	mV/decade	
Off current	-21.43672518	mA	
25C			
x0	x1	y0	y1
0.48	0.3377	-14.4198	-17.5802
SS	22.20941673	mV/decade	
Off current	-25.08032003	mA	

75C			
x0	x1	y0	y1
0.4422	0.3444	-14.5185	-16.4444
SS	19.69222904	mV/decade	
Off current	-23.22640368	mA	

Q3 (a)			
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Short channel									
x0	x1	y0	y1						
2.8531	2.0829	0.0005768	0.0005564						
Slope	0.000026486626	mV/decade							
VA	0.000501231004	mA							
Ro	1995.088073								
Long channel									
x0	x1	y0	y1						
2.8829	1.6297	0.0003108	0.0003097						
Slope	0.000000877752	mV/decade							
VA	0.000308269526	mA							
Ro	3243.914548								
Q3 (b)									
Long channel									
Vth	0.706								
Sub-threshold slope	3.5131								
On current	-21.37	log scale							
Off current	-23.71	log scale							
Short channel									
Vth	0.706								
Sub-threshold slope	3.5131								
On current	-21.37	log scale							
Off current	-23.71	log scale							