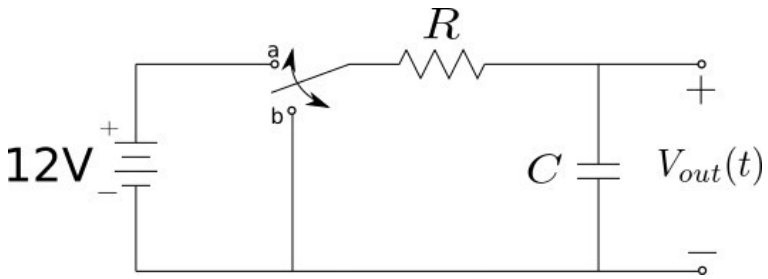
DC MOTOR OPERATION USING ARDUINO

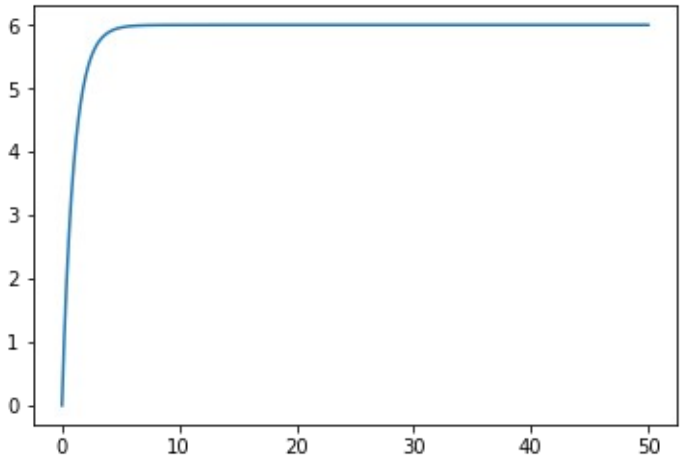


The transfer function for the given high pass filter is :

Vo(s)/Vin(s) = 1/(1+RCs)

For excitation of 6 V , we will get
Vo(s) = 6/(1 + s)
Vo(t) = 6u(t)(1-e^(-t))

At t ---> inf , Vo(t) ----> 6 V and at t = 0 , Vo(0) = 0V .



GRAPH OF Vo(t) FOR Vin = 6V USING MATPLOTLIB

So , representign the same graph that we obtained having T = 1/500 .

Voltage	Duty Cycle (%) (voltage/12)*100	Digital Value (256/100)*(Duty)
0.5	4.16	~11
1	8.33	~21
1.5	12.5	32
2	16.67	~43
4	33.33	~85
6	50	128
8	66.67	~170

My digital level in my code is 256 an 8 bit TIMER0 register counting from 0 till 255 .

Min resolutin in time that can be achived :
is = 1/(time for 1 tick)

time for one tick = 16,000,000/(64) , I am using 64 as prescaler value to reduce my frequency of operation .

So , time for 1 tick = 1/2,50,000 .

so , we have resolution of 4 * 10^ (-5) = 40 us .