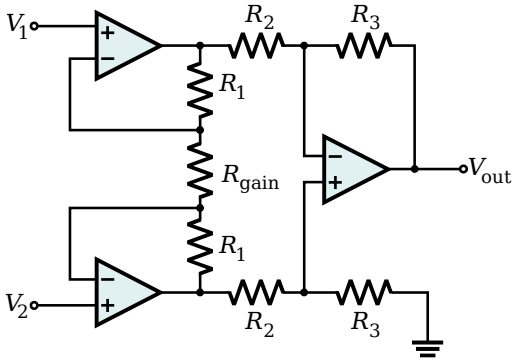
Assignment-8	EE204 - Analog Circuits	11th Apr 2018
Submission Deadline-17.00 20th Apr, 2018.	Submission Protocol: Drop hardcopy in the EE office	Comment: None

1.	Design an astable multi-vibrator using OPAMP for a period of 1 μS and 25% duty cycle. It has unequal period for ON and OFF time.
2.	Derive the input impedance equations for all the GICs shown in Figs. 15.6(a)-(c) of the shared document “GIC and FDNR”.
3.	It is required to derive a signal V_o = 0.1sin($4\pi10^3t+\pi/3$) from an input signal V_i = 0.01sin($2\pi10^3t+\pi/2$). Design an OPAMP based circuit for the same.
4.	The depletion capacitance of a diode under reverse bias voltage V follows the relation: $C = \alpha V^{-n}$. Find out the expression for α and n for an ideal diode. Design an LC or RC oscillator using the diode and find out the frequency of oscillation as a function of bias. Design the circuit in such a fashion that the bias can be controlled independently.
5.	Design an OPAMP based circuit to implement the following second order generalized differential function: $$y = a\frac{d^2x}{dt^2} + b\frac{dx}{dt} + c$$
6.	Find the output of the following instrumentation amplifier: 
7.	Design the following filters: