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M. Sc. Sem III
Paper - MPHY CC-12
Electronics II

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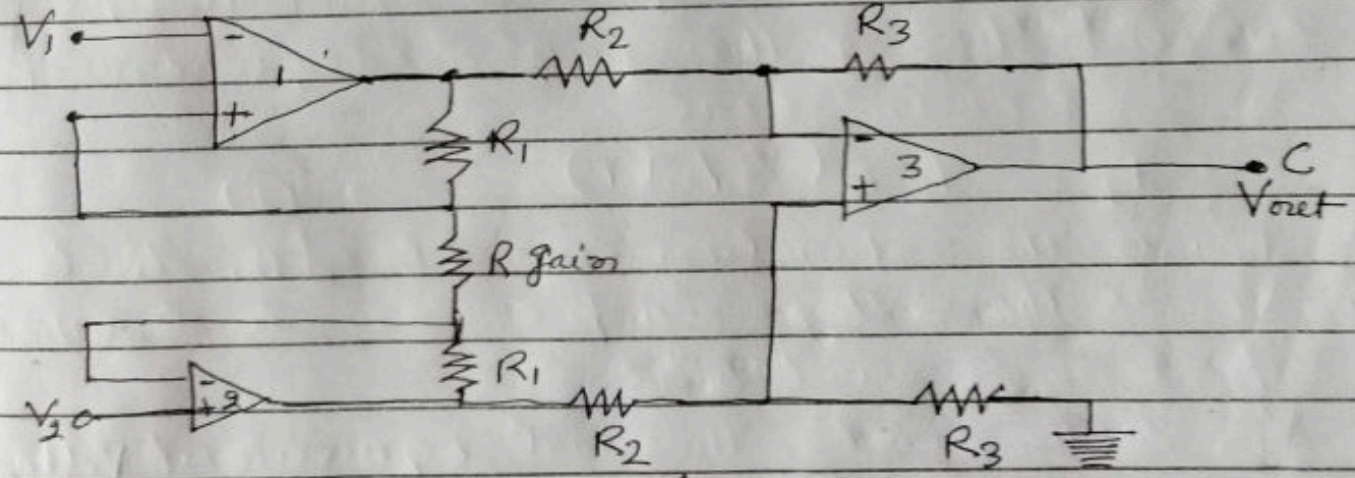
1.

VKSU

Instrumentation Amp. using OP-Amp.

The instrumentation amp. using OP-amp. Circuit is shown below. The OP-Amps 1 and 2 are non-inverting amps and OP-Amp 3 is a difference amplifier. These Three OP-amps together, form an instrumentation amplifier. Instrumentation amps final output volt is the amplified difference of the input signals applied to the input terminals to OP-amp. 3, Let the outputs op-amp 1 and OP-amp 2 be V_o1 and V_o2 respectively.

Then $V_{out} = \frac{(R_3/R_2)}{(V_o1 - V_o2)}$ look at the input stage of the instrumentation amp. as shown in the figure below. The instrumentation amp. derivation is discussed below.



Instrumentation Amp. using OP-amp.

fig.

The Potential at node A is the input voltage V_1. Hence the Potential at node B is also V_1, from the virtual short concept. Thus, the Potential at node G, is also V_1.

The Potential at node D is the input voltage V_2. Hence the Potential at node C is also V_2, from the virtual short. Thus the Potential at node H is also V_2.