

A switching circuit using 555 timer is shown in the following fig. [Here  $C=0.1\mu\text{F}$  &  $R=10\text{k}\Omega$ ]

- i. Determine the limit on  $K$  for which the circuit has at least one dc steady state.
- ii. For  $K=4$ , Sketch  $V_o(t)$  and  $V_c(t)$  in the same time scale and find the frequency of oscillation. How do you modify this circuit to get 50% duty cycle? In that case, what is the value of  $K$ .

