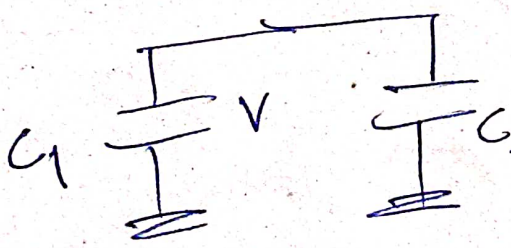
T-I interview Questions

Q1) There is an ant at one end of the corner and it needs to go to the opposite corner what will the shortest distance covered by the ant ? (Ans: $\sqrt{5}a$)

Q2) There are two glass (transparent) and a tap, how will you fill 3/4th of the glass ?. (no scale reading on glass & you can hold the glass).

Q3) There is a digital multimeter and you gotta find the value of resistance using, here the prober also has a resistance (R_1 & R_2), then how will you find the correct resistance?

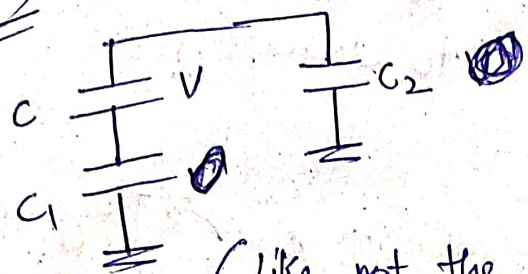
Q4) There are two capacitor C_1 & C_2. (C_1 is charged initially to 'V' volts) then final charge on C_2 is ?



They will ask the final answer & the correct procedure

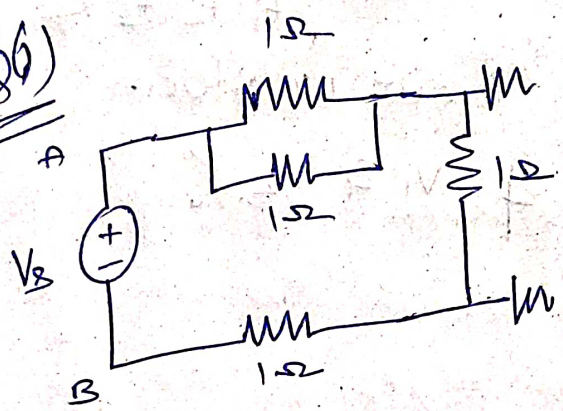
Note: Sir also asked what is happening in the circuit and how the relation between C & V (like extreme basics).

Q5)



explain how you will solve this problem intuitively?
(Like not the answer, just the procedure)

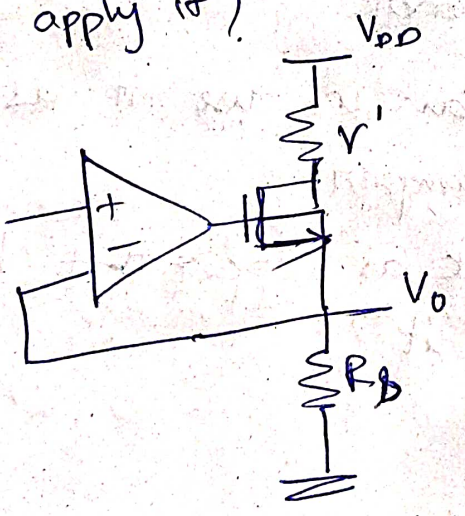
Q6)



find R_{eq}=? across AB terminals.

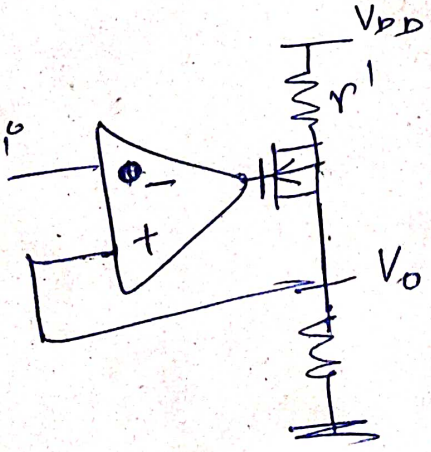
Q7) What is virtual ground? (when do you apply it)

Q8)



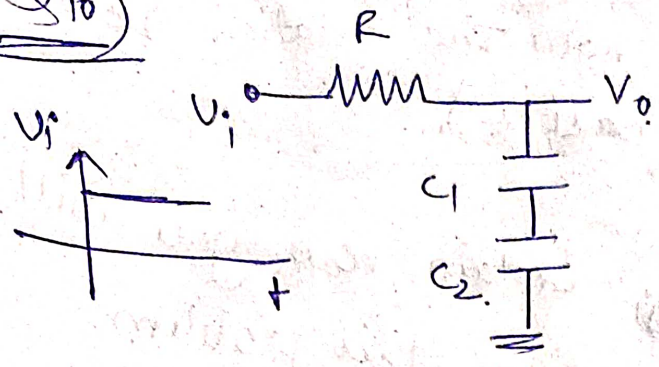
type of feedback? and how do you analyse it.
(just the procedure is being checked).

Q9)



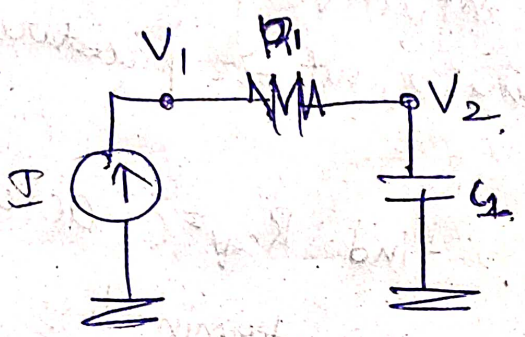
type of feedback?

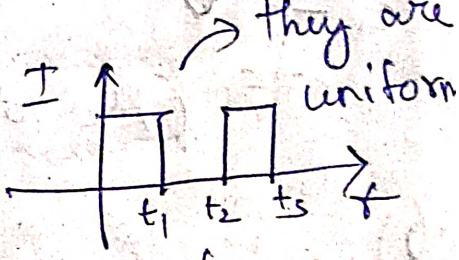
Q10)



wave form explaination (sir did n't ask to draw).

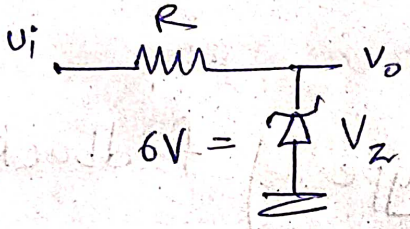
Q11)





Draw waveform of V_1 & V_2.?

Q12) Zener-diode:



i) Draw V-I curve of zener.

ii) Can we use it as clamper.

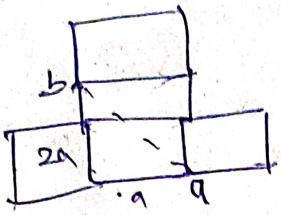
iii) if we want it to work as clipper that clips 30V how will you do it?

Interview: 40 - 45 min.

Tips: Refer prep for TI-interview series by Himanshu Agarwal.

Hints & Answers

Q1) Unfold the cube then you can get it



$$AB = \sqrt{4a^2 + a^2} = \sqrt{5}\,a$$

Q2) fill the glass completely now pour it into another glass so that by comparing it becomes 50% now similarly by comparing it simultaneously pour the water by changing reference level.

Q3) The reading with resistor: $R+X+Y$ (resistance of wires)

Shot the wires then check the reading: $X+Y$

So actual resistance is $(R+X+Y)-(X+Y)$

Q4) now initial charge = final charge. $(Q_i = Q_f)$

$$C_1 V = C_1 V' + C_2 V'$$

$$\Rightarrow V' = \frac{C_1 V}{C_1 + C_2}$$

this will be the final voltage across each capacitor.

Q5) Since, the capacitors are in series charge through each and every capacitor is same so the can write V' on C ; $\frac{CV'}{C_1}$ on C_1 & $\frac{CV'}{C_2}$ on C_2 then Write KVL and get V'.

Q6) Write KVL or as we know that

$\frac{V_x}{I} = R_{eq}$ So, $V_x - \frac{1}{2}I - I = 0$

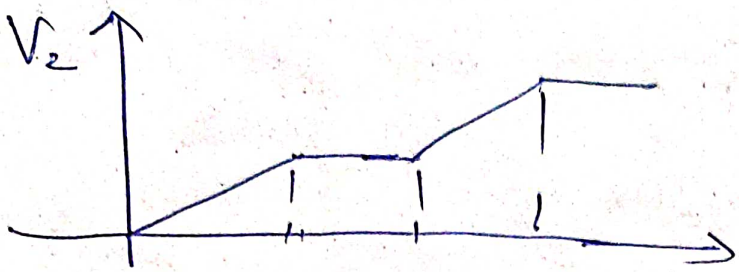
$$\boxed{\frac{V_x}{I} = \frac{3}{2}\Omega}$$

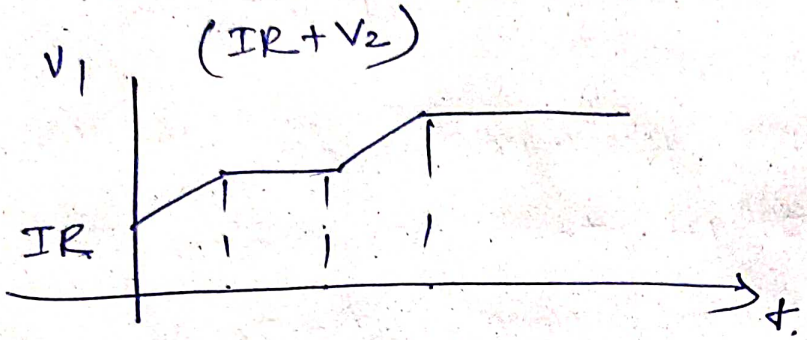
Q7) When the open loop-gain $\longrightarrow \infty$
& negative feedback is present.
then $V_+ = V_-$ this virtual ground.

Q8) & Q9) } first you increase small amount of V_i and observe the changes in circuit accordingly & finally observe whether V_0 is increasing or decreasing respectively as we increase or decrease V_i.

Q10) Like first effective capacitance $\frac{C_1 C_2}{C_1 + C_2}$ then.
at $t=0$ voltage is zero. and it starts increasing to V_i but C_1 will be charging to $\frac{C_2 V}{C_1 + C_2}$
& $C_2 \rightarrow \frac{C_1 V}{C_1 + C_2}$

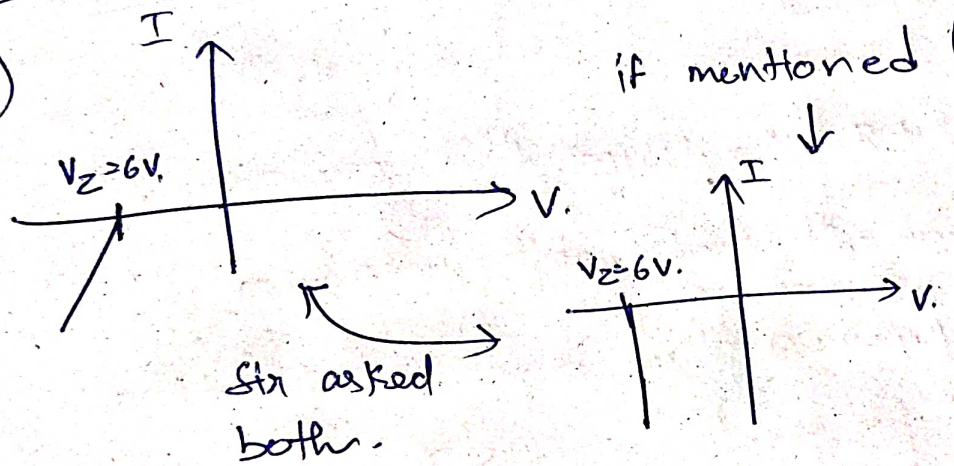
Q11)





Q12)

i)



ii) No, we can use it as clipper only.

iii) place a battery & it will serve our purpose.