EEE 4383

LAB REPORT

Experiment No. : 3

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Dept. : CSE

Section : 2B

Task 1

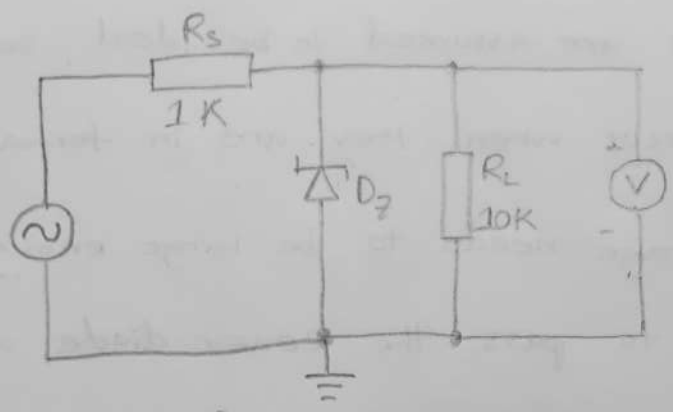


fig 1

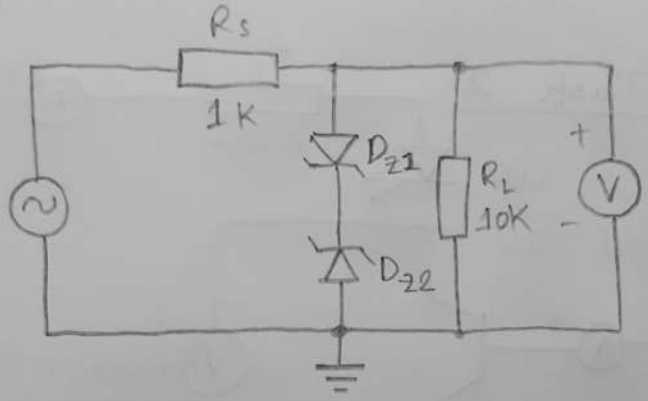
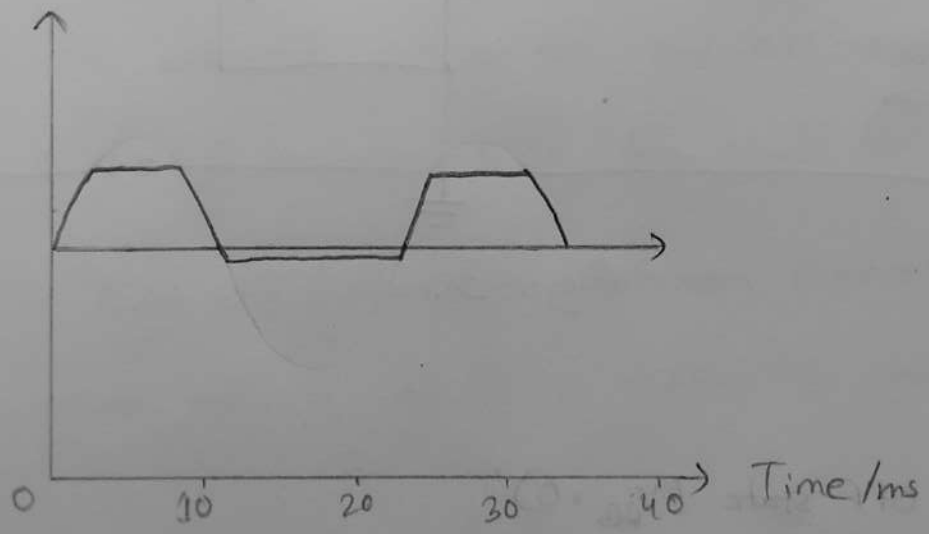
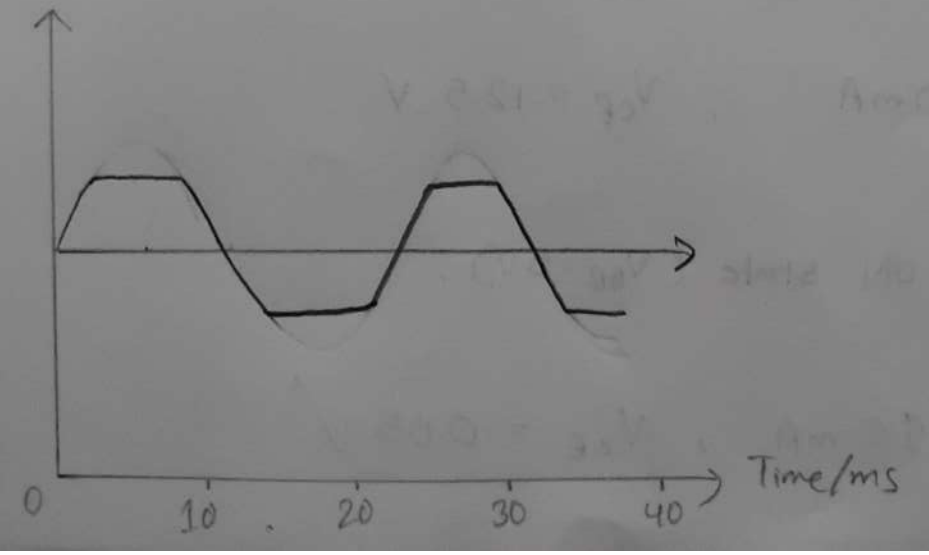


fig 2





Discussion:

- The zener diode are assumed to be ideal, so that no voltage drops occur when they are in forward bias.
- The supply voltage needs to be large enough to cause the zener diode to pass the zener diode voltage.

Task 2

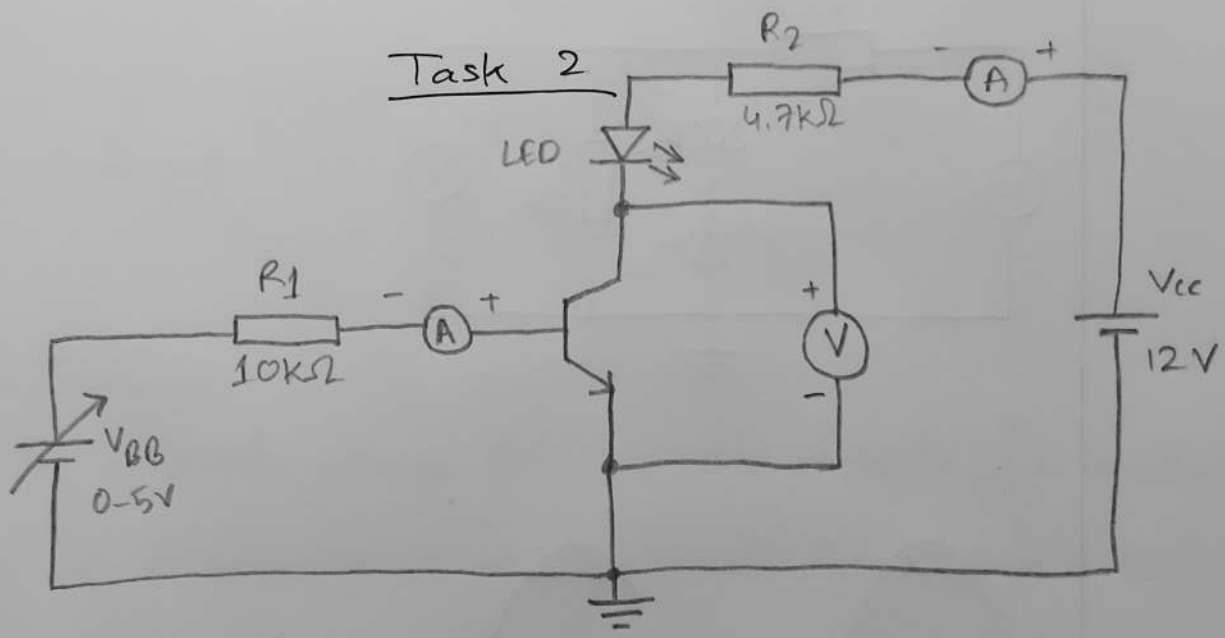


Fig. 3.

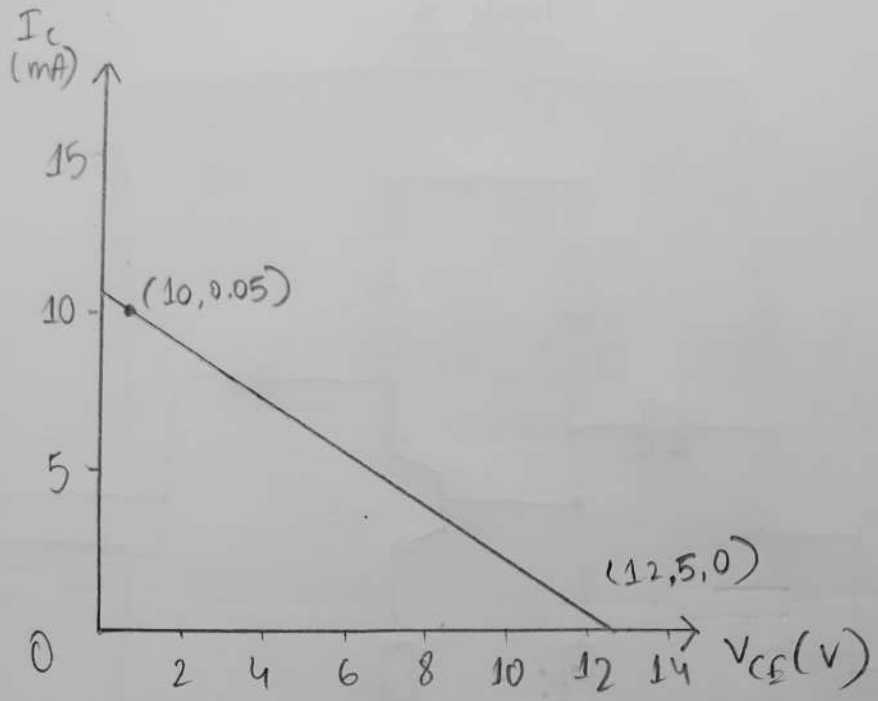
Data:

Switch OFF state ($V_{BB} = 0$):

$I_C = 0\,mA$, $V_{CE} = 12.5\ V$

Switch ON state ($V_{BB} = 5\ V$):

$I_C = 10\,mA$, $V_{CE} = 0.05\ V$



Graph : DC Load Line

Discussion :

- The achieved voltage for the ON state is considered to be 0 because it is too small for fitting in the scale.

- There are differences between theoretical and practical values of V as it is difficult to keep voltage supply at 12V.

Task 3

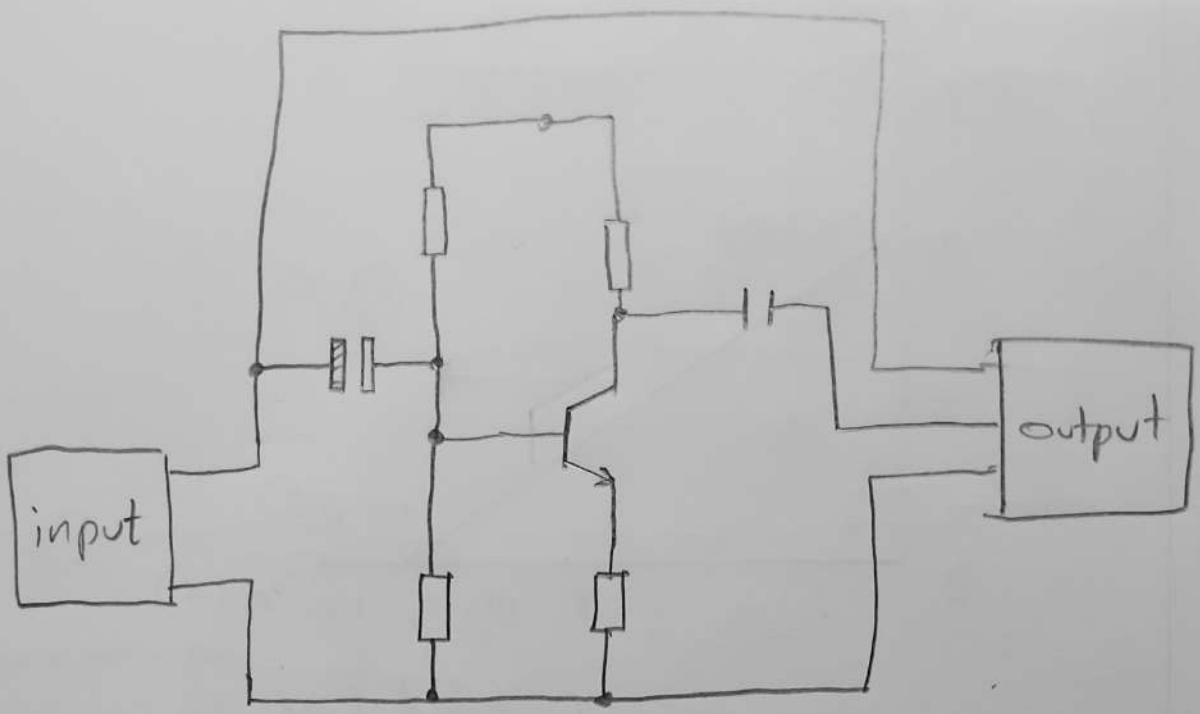


fig 4

Data Table:

V_i = Input voltage = ~~300~~ mV , Gain = 20 log A

Sl no.	input frequency	Vo (V) Amplitude	Voltage gain A = V_o/V_i	Gain (DB)	log (frequency)
1	90 Hz	3.35	8.4	18.5	1.95
2	1000 Hz	3.4	8.5	18.58	3
3	10 kHz	3.45	8.6	18.7	4
4	100 kHz	2.75	7.0	16.78	5
5	1 MHz	1	2.5	7.96	6
6	3MHz	0.35	0.85	-1.412	6.5

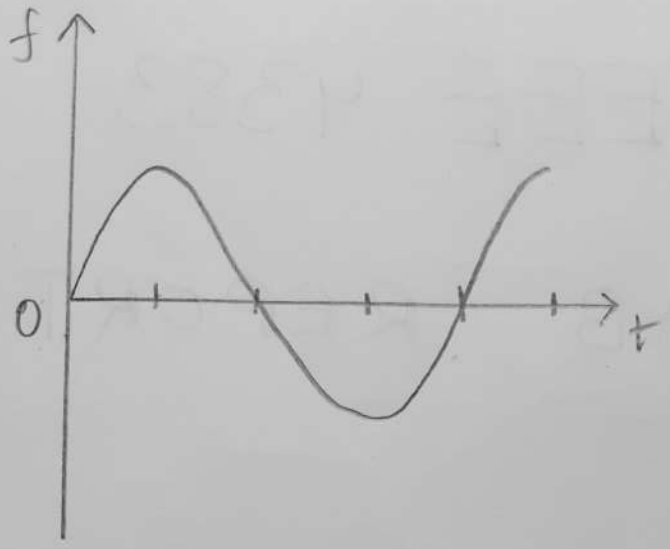


Fig: Input voltage at 100 Hz

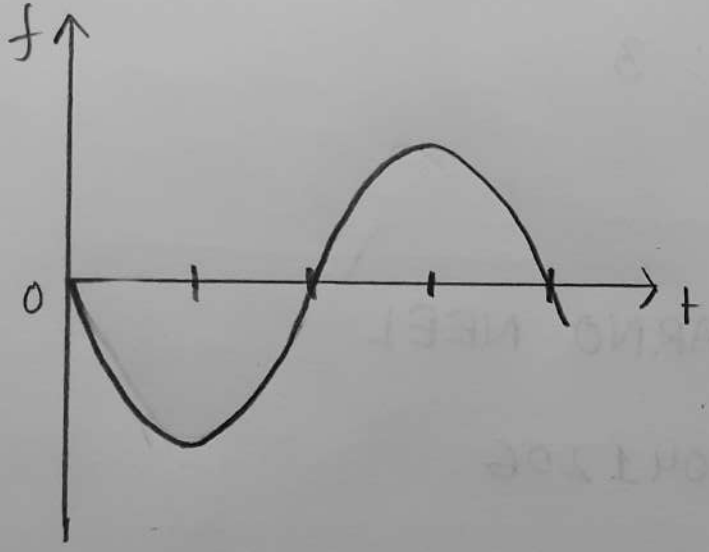


Fig: Output voltage at 100 Hz

Discussion:

- For the frequency axis, we had to use a log scale since the difference in the frequency valve increased greatly.
- A large set of readings would have led to a more accurate graphical expression.