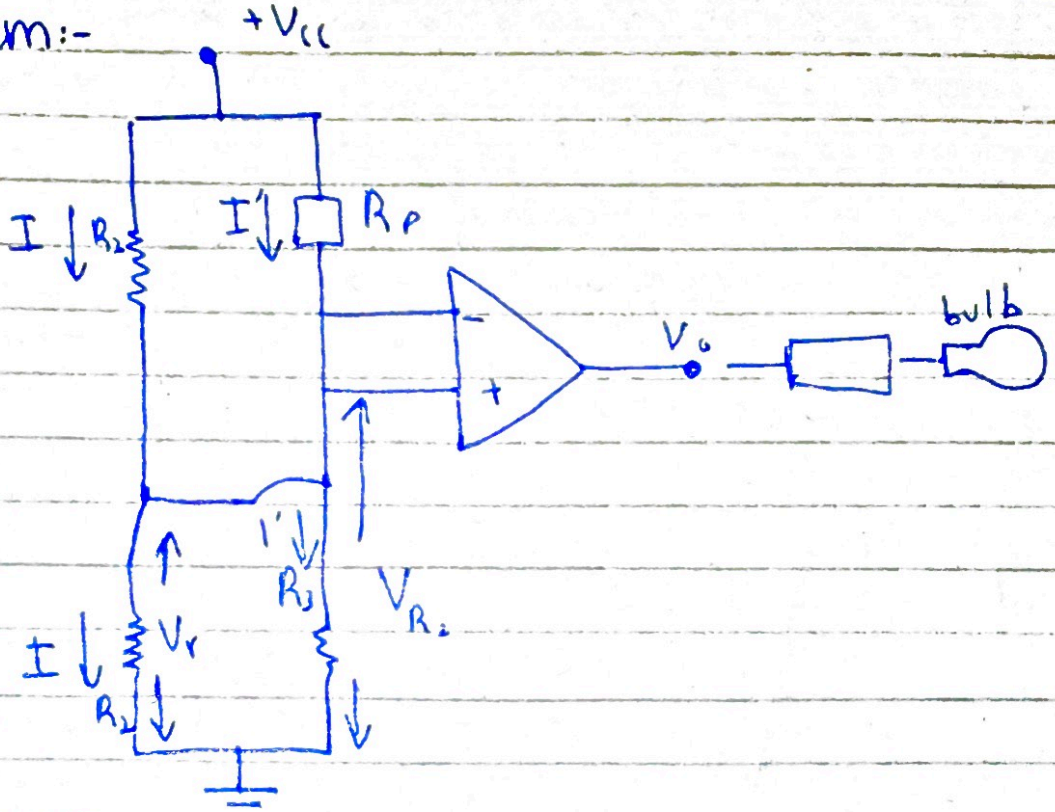
Nabeeha Waseem 2nd year

# PHYSICS ASSIGNMENT

Q1) $V+ \neq V-$ would result in infinite output voltage. Ideal OP-AMP has infinite gain. Therefore, $V+ = V-$.

$V_{in} \longrightarrow + \longrightarrow R_1 \longrightarrow V- \,||\, R_2 \,|V \rightarrow$ OP-AMP $\rightarrow$ $V_{out}$.

Q2) Diagram:-




Q3)


$X = \overline{A \cdot B}$

Table :-

| A | B | $\overline{A \cdot B}$ |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

Q4) Data:

$I_c = 10mA = 0.01A$

$\beta = 200$

$V_{BE} = 0.6V$

$R_B = ?$

Formula :- $R_3 = \left(\frac{V_{cc} - V_{BE}}{I_c}\right) B$

$= \left(\frac{9 - 0.6}{0.01}\right) \times 200$

$= 168000\ \Omega$

Ans $= 168K\ \Omega$

Q5)

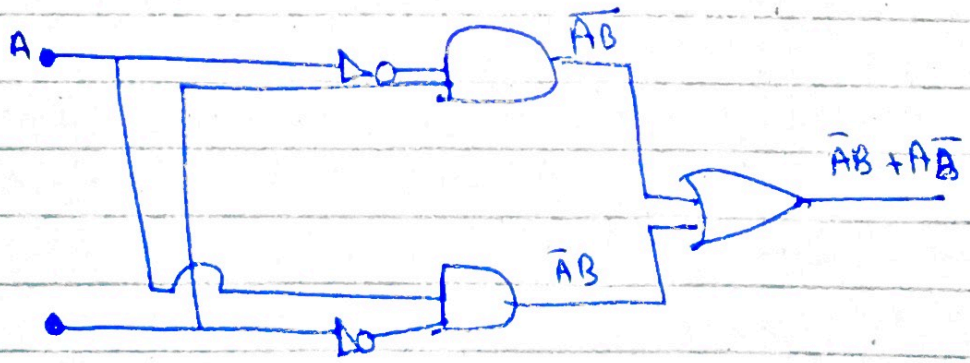



Table :-

| $\bar{A}B$ | $A\bar{B}$ | $\bar{A}B + A\bar{B}$ |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| 0 | 1 | 1 |
| 0 | 0 | 0 |

Q6)

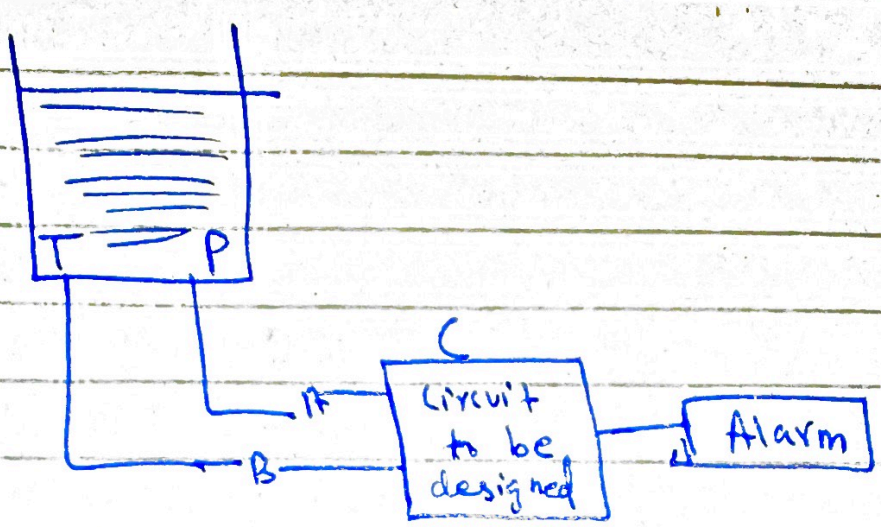



Table :-

| A | B | C |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |