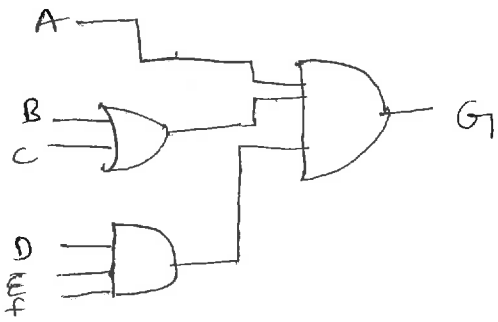
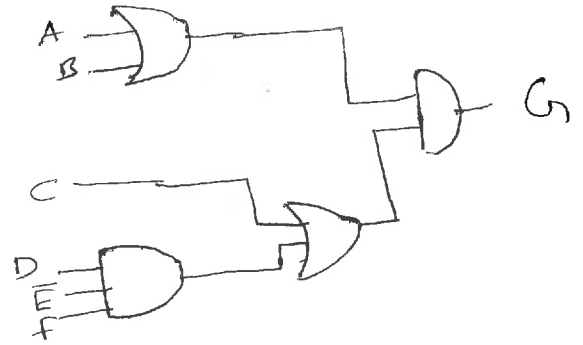


Assignment-1

1.1) a) $G = A(B+C)(D\bar{E}F)$

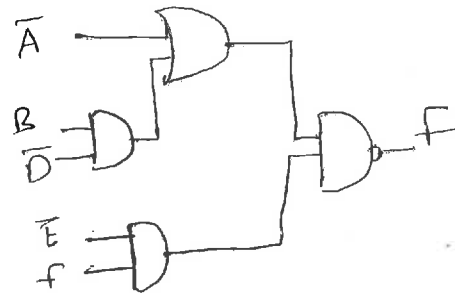


b) $G = (A+B)(C+D\bar{E}F)$



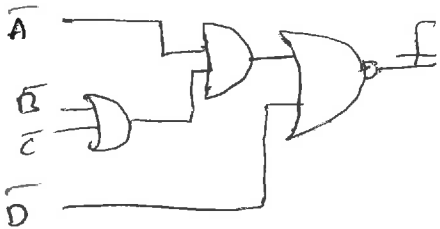
1.3) a) $F = A(\bar{B}+D) + EF$

$$F = \overline{(\bar{A} + B\bar{D})(\bar{E} + \bar{F})}$$



b) $F = (A + BC)D$

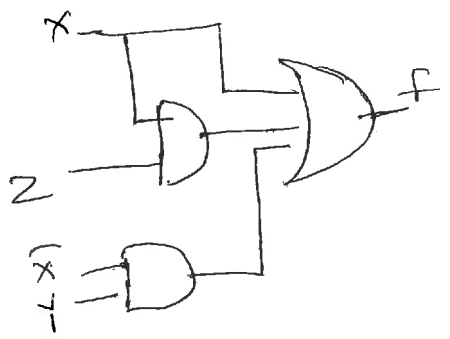
$$= \overline{\bar{A}(\bar{B} + \bar{C}) + \bar{D}}$$



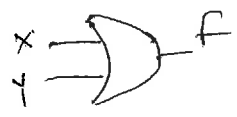
1.5) $f = x + (\overline{x+y}) + xy$

$$\begin{aligned} &= x + \bar{x}\bar{y} + xy = x(1+y) + \bar{x}\bar{y} = x + (\bar{x}\bar{y}) \\ &= (x + \bar{x})(x + \bar{y}) \\ &= (x + \bar{y}) \end{aligned}$$

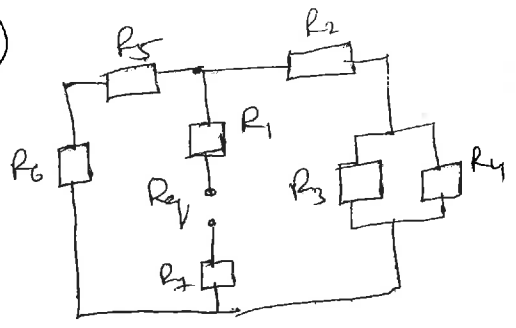
1.8)



$$\begin{aligned}
 f &= x + xz + \bar{x}y \\
 &= x(1+z) + \bar{x}y \\
 &= x + \bar{x}y \\
 &= (x + \bar{x})(x + y) \\
 &= x + y
 \end{aligned}$$

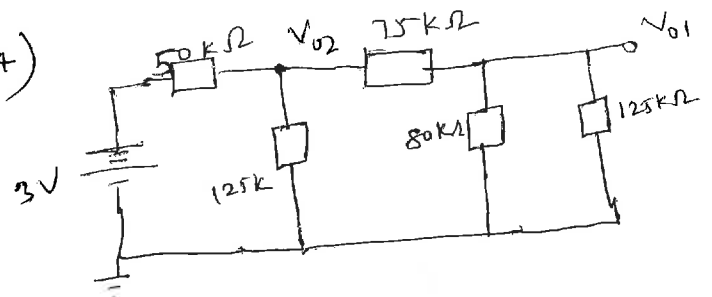


1.11)



$$R_{eq} = R_1 + (R_2 + R_3 \parallel R_4) \parallel (R_5 + R_6) + R_7$$

1.14)



$$\begin{aligned}
 \textcircled{a} \quad V_{01} &= \left[\frac{125k \parallel (75k + 80k + 125k)}{50k + 125k \parallel (75k + 80k \parallel 125k)} \right] \left[\frac{80k \parallel 125k}{75k + 80k \parallel 125k} \right] (3V) \\
 &= 0.6534V
 \end{aligned}$$

(b)

Write the V_{o2} expression by inspection & solve for V_{o2} using a voltage divider

$$V_{o2} = 3V \left(\frac{125K \parallel (75K + 80K \parallel 125K)}{50K + 125K \parallel (75K + 80K \parallel 125K)} \right) = 1.663V$$