ECEN 4618 MIDTERM EXAM 11/6/98

SOLUTIONS

1a. \[ |V_{out}(t)| = 10V = V_{cc} \]
1b. \[ VL = \frac{V_{cc}}{3} = 3.33V \]
\[ VH = \frac{2V_{cc}}{3} = 6.67V \]
1c. \[ T = 13.86s = 2\pi \ln(2) \text{ WHERE } \pi = R_4C_1 \]
1d. \[ |V_{out}(t)| = 15V \]
\[ VL = 5V \]
\[ VH = 10V \]
\[ T = 13.86s \text{ (NO DEPENDANCE ON } V_{cc}) \]

2a. \[ V_{out}(t) \]
\[ (NO \text{ PULL-UP RESISTOR}) \]
\[ 0 \quad \rightarrow \quad t \]

2b. CORRECTIONS: 1K\Omega PULL-UP IS CONNECTED TO PIN 3 INSTEAD OF PIN 7. 1M\Omega RESISTOR BETWEEN PIN 8 AND PIN 2 IS MISSING.

3a. \[ V_{out}(t) \]
\[ 5V \]
\[ 0V \]
\[ 100\mu s \times K \]

3b. ONE POSSIBLE SOLUTION IS...

\[ 9R \frac{v_2(t)}{V_{cc}} \]
\[ 90K \]
\[ R \]
\[ 30K \]
\[ 0.5V \]

\[ V_{2}(t) \rightarrow 15V \]
\[ V_{1}(t) \rightarrow -15V \]
\[ V_{out}(t) \]