

# 2361 HW #4

1) In period 0.3 duty

a-  $PR2 = 15444$       $OCR = 41000$

b-  $PR2 = 1499$       $OCR = 6600$      scale by 10

2)

a-  $UBRG_{calc} = \left[ \frac{(16 \cdot 10^6)}{(16 \cdot 1200)} \right] \cdot 1 = 832$

Actual BR =  $200 \cdot 410142$      Error: 0.04002%

b-  $UBRG = \left[ \frac{12 \cdot 10^6}{(160000)} \right] \cdot 1 = 624$

Actual BR =  $120000000$      Error: 0%

c- UART has a parity bit, so both error percentages are small enough for basic use.

3b- The program decrypts by taking the ASCII character into 0-25, adding 3, modulus by 26 to prevent overflow, and turning it back into ASCII.