Student Number: [redacted] Name: Bryan Hoang

3. (10 points)

(a) **Answer:**
To solve $11^x = 21$ in $\mathbb{F}_{71}$, we first note that 11 has order 70 in $\mathbb{F}_{71}$. Let $n = 1 + \lfloor 70 \rfloor = 9$. After writing code to implement the algorithm, we find that $\boxed{x = 37}$.

(b) **Answer:**
To solve $156^x = 116$ in $\mathbb{F}_{593}$, we first note that 156 has order 148 in $\mathbb{F}_{593}$. Let $n = 1 + \lfloor 148 \rfloor = 13$. After writing code to implement the algorithm, we find that $\boxed{x = 59}$.

(c) **Answer:**
To solve $650^x = 2213$ in $\mathbb{F}_{3571}$, we first note that 650 has order 510 in $\mathbb{F}_{3571}$. Let $n = 1 + \lfloor 510 \rfloor = 23$. After writing code to implement the algorithm, we find that $\boxed{x = 319}$.