

Student Number: XXXXXXXXXXName: Bryan Hoang4. (10 points) **Answer:**Verifying the signature S yields

$$\begin{aligned} S^e \pmod{N} &\equiv 876453^{87953} \pmod{1562501} \\ &\equiv 772481 \pmod{1562501}, \end{aligned}$$

which implies that S is not a valid signature.Verifying the signature S' yields

$$\begin{aligned} S'^e \pmod{N} &\equiv 870099^{87953} \pmod{1562501} \\ &\equiv 161153 \pmod{1562501} \\ &= D', \end{aligned}$$

which implies that S' is a valid signature.Verifying the signature S'' yields

$$\begin{aligned} S''^e \pmod{N} &\equiv 602754^{87953} \pmod{1562501} \\ &\equiv 586036 \pmod{1562501} \\ &= D'', \end{aligned}$$

which implies that S'' is a valid signature.