Q4i:We claim that $[1], [5], [7], [11]$ generate C_{12} and no other elements do. We can verify using the group operation that indeed

$$\begin{aligned}
\langle 1 \rangle &= \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 0\} \\
\langle 5 \rangle &= \{5, 10, 3, 8, 1, 6, 11, 4, 9, 2, 7, 0\} \\
\langle 7 \rangle &= \{7, 2, 9, 4, 11, 6, 1, 8, 3, 10, 5, 0\} \\
\langle 11 \rangle &= \{11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0\}
\end{aligned}$$

We claim that any other element of C_{12} will not generate C_{12}. Note that $1, 5, 7, 11$ are the only integers less than 12 which are coprime to 12. Assume that n is not coprime to 12. We will show that $|\langle n \rangle| < 12$. Since $n < 12$ and not coprime, for some integer $k < 12$ we have that $nk = 12$. We see that

$$\langle n \rangle = \{n, 2n \dots kn\}$$

We see that $|\langle n \rangle| = k$ which is strictly less than 12. Hence any element of C_{12} which is not coprime to 12 will not generate C_{12}

Q4ii: We claim that every $k < n$ that is coprime to n generates C_n. By bezouts identity we have that there exists integers a, b such that $ak + nb = 1$. If we had any $c \in C_n$, we can write $c = (ac)k + n(bc)$. Therefore we see that

$$[c]_n = [(ac)k + n(bc)]_n = [(ac)k]_n + [nbc]_n = [(ac)k]$$

Thus k generates C_n