Q2: We claim that if $f : M \to N$ is continous, and M is covering compact, then f is uniformly continuous. Since M is compact, it follows that its image under the continuous f is a compact subset of N. Now consider the following open cover of N. Let $\varepsilon > 0$, define $\mathcal{U} = \{N_{\frac{\varepsilon}{2}}(q) : q \in N\}$. We will denote each open cover corresponding to point q as U_q. Thus by continuity of f, we will have that $\mathcal{V} = \{f^{pre}(U_q) : q \in N\}$ will be an open cover of M. By covering compactness, we can extract a finite subcover corresponding to points $q_1, \ldots q_n$ where $U_{q_1}, \ldots, U_{q_n}$ and $(f^{pre}(U_{q_1}), \ldots f^{pre}(U_{q_n}))$ are finite subcovers of N and M, respectively. Since we know that sequential compactness is equivalent to covering compactness, we can apply the lebesgue number lemma to our open cover of M. Hence there exists some $\lambda(\varepsilon) > 0$ with the property that for all $x \in M$, there exists some $f^{pre}(U_{q_x})$ with $M_\lambda(x) \subset f^{pre}(U_{q_x})$. We see that for any $\varepsilon > 0$, we choose $\delta = \lambda(\varepsilon)$. Then For any $x \in M$, we can find a $M_\lambda(x) \subset f^{pre}(U_{q_x})$. If we take any $y \in M_\lambda(x)$, we have that $d_M(x, y) < \delta$. Their image under f will belong to some U_{q_x} and thus $d_N(f(x), f(y)) < \varepsilon$ by the triangle inequality. This is exactly what it means for f to be uniformly continuous.