Abdulkadir Dogan and John R Graef* (John-Graef@utc.edu), Department of Mathematics, The University of Tennessee at Chattanooga, Chattanooga, TN 37403, and Lingju Kong. Higher order singular multi-point boundary value problems on time scales.

We study the singular boundary value problem

\[
\phi \left( u^{\Delta n-1} \right)^{\nabla} + \lambda a(t)f(u) = 0, \ t \in (0,T)_{\mathbb{T}},
\]

\[
\begin{aligned}
& u^{\Delta i}(0) = \sum_{j=1}^{m} \alpha_j u^{\Delta i}(\xi_j), \ i = 0, \ldots, n - 2, \\
& \phi \left( u^{\Delta n-1}(T) \right) = \sum_{j=1}^{m} \beta_j \phi \left( u^{\Delta n-1}(\xi_j) \right),
\end{aligned}
\]

on a time scale \( \mathbb{T} \). Conditions for the existence and uniqueness of positive solutions are obtained. The dependence of positive solutions on the parameter \( \lambda \) is studied. We also present similar results for a problem with the same differential equation and different boundary conditions. The results are illustrated with examples. Our analysis mainly relies on the mixed monotone operator theory. (Received September 16, 2009)