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OSCILLATION CRITERIA FOR n^{th} ORDER NONLINEAR DYNAMIC EQUATIONS ON TIME-SCALES

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Abstract. Some new criteria for the oscillation of n^{th} order nonlinear dynamic equation

$$x^{\Delta^n}(t) + q(t)\, x^{\lambda}(\sigma(t)) = 0$$

are established.

1. Introduction

Consider the n^{th} order nonlinear dynamic equation

$$x^{\Delta^n}(t) + q(t)\, x^{\lambda}(\sigma(t)) = 0 \tag{1.1}$$

on an arbitrary time-scale $\mathbb{T} \subseteq \mathbb{R}$ with $\sup \mathbb{T} = \infty$, where n is a positive even integer, λ is the ratio of positive odd integers and $q : \mathbb{T} \to \mathbb{R}^+ = (0, \infty)$ is a real-valued, rd continuous function.

We recall that a solution x of equation (1.1) is said to be nonoscillatory if there exists a $t_0 \in \mathbb{T}$ such that $x(t)\, x(\sigma(t)) > 0$ for all $t \in [t_0, \infty) \cap \mathbb{T}$. Otherwise, it said to be oscillatory. Equation (1.1) is said to be oscillatory if all its solutions are oscillatory.

Recently there has been an increasing interest in studying the oscillatory behavior of first and second order dynamic equations on time-scales, see [1, 3, 4]. With respect to dynamic equations on time-scales, it is fairly new topic and for general basic ideas and background, we refer to [2].

To the best of our knowledge, there are no results regarding the oscillation of higher order equations of type (1.1). Therefore, the purpose of this paper is to establish some new criteria for the oscillation of equation (1.1). The obtained

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