

THESIS TITLE : ON THE ARC-TOUGHNESS OF DIGRAPHS  $D_1(n,r,d,m_1,m_2)$

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## ABSTRACT

Arc-toughness  $\tau_1(D)$  of a digraph  $D$  is defined as

$$\tau_1(D) = \min \left\{ \frac{|X|}{\omega(D-X)-1} \mid X \text{ เป็น arc-cutset ของ } D \right\}$$

where  $\omega(D-X)$  denote the number of components of  $D-X$ . Let  $D = D_1(n,r,d,m_1,m_2)$ ,  $m_2 > m_1 > nd$ ,  $r \leq n$ ,  $d \geq 4$  are family of digraphs which each member consisting of three disjoint complete digraphs  $K_n$ ,  $K_{m_1}$  and  $K_{m_2}$  such that each vertex of  $K_n$  is adjacent to exactly  $d$  distinct vertices of  $K_{m_1}$  and  $K_{m_2}$  where  $n$  vertices of  $K_n$  there are  $r$  vertices join in one direction, otherwise join in two direction and each vertex of  $K_{m_1}$  is incident to exactly one vertex of  $K_n$ . This thesis we determine the arc-toughness of the digraph  $D = D_1(n,r,d,m_1,m_2)$