Abstract

The concept of X-chromatic partition and hyper independent chromatic partition of bipartite graphs were introduced by Stephen Hedetniemi and Renu Laskar. We find the bounds for X-chromatic number and hyper independent chromatic number of a bipartite graph. The existence of bipartite graph with $\chi_h(G) = a$ and $\gamma Y(G) = b - 1$, $\chi h(G) = a$ and $\chi X(G) = b$ where $a \leq b$. 

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are proved. We also prove the existence of bipartite graphs for any three positive integers $a$, $b$, $c$ such that $c \geq 2(b-a)+1$, there exists a graph $G$ such that $\chi_{Xd}(G)=a$, $\chi_{X}(G)=b$ and $|Y|=c$. The bipartite theory of Dominator colouring is introduced.

**Reference**

- Stephen Hedetneimi, Renu Laskar, A Bipartite theory of graphs II, Congressus Numerantium, Volume 64, November 1988, 137-146.

**Index Terms**

Computer Science  
Applied Mathematics

**Key words**

X.Chromatic number  
hyper independent chromatic number  
X-dominator X-colouring of a graph