

**(k, c) -CHOOSABILITY OF CYCLE GRAPHS, WHEEL GRAPHS AND
GENERALIZED PETERSEN GRAPHS $GP(n, 1)$**

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List colouring is a way of graph colouring used in graph theory, in which each vertex can be assigned a list of permissible colours. A graph is deemed k -choosable, or k -list colourable if it can be properly list coloured regardless of the specific assignment of a list containing k colours to each vertex. The aim of this research was to understand the concept of L -list colourability for every (k, c) -assignment L of any planar graph and identify values for k and c of three families of planar graphs: the cycle graphs, wheel graphs and generalized Petersen graphs of the form $GP(n, 1)$ that are (k, c) -choosable. Earlier studies on (k, c) -choosability of planar graphs were reviewed, and the methods used in the findings were applied to complete the research problem. Significant results relating to the relationship between k -choosability, (k, c) -choosability, and the list chromatic number for any graph G were proved in this research. It was proved that the cycle graph C_n and generalized Petersen graphs $GP(n, 1)$ are 3-choosable for any $n \geq 3$, $(k, 3)$ -choosable for any $k \geq 3$ and $(3, t)$ -choosable for $t = 1, 2, 3$. Also, the wheel graph W_n is 4-choosable, $(k, 4)$ -choosable for any $k \geq 4$ and $(4, t)$ -choosable for $t = 1, 2, 3, 4$. Specific values for k and c for the existence of (k, c) -choosability were found for all three families of planar graphs.

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