# STAR COLOURING IN FEW CLASSES OF GRAPHS

## A. S. Shanthi and Fathima Tabrez*

Department of Mathematics,
Stella Maris College, Chennai - 600086, INDIA

E-mail : shanthu.a.s@gmail.com

*Department of Mathematics, Anna University, Chennai - 600025, INDIA

E-mail : tabrezfathima13@gmail.com

**Abstract:** A proper vertex colouring of a graph $G$ is called a star colouring if every path of $G$ on four vertices is not 2-coloured. The star chromatic number is the minimum number of colours required to star colour $G$ and it is denoted by $\chi_s(G)$. The Star Chromatic Number of the Middle Graphs of path $(P_n)$; Shadow Graphs of path $(P_n)$ and Tadpole graphs $(T_{3,n})$; $m$- fold Triangular Snake graphs $(S(C_3, m, n))$ have been discussed in this paper.

**Keywords and Phrases:** Star Colouring, Star Chromatic number, Middle graph, Shadow graph, Tadpole graph, $m$-fold Triangular Snake graphs.

**2020 Mathematics Subject Classification:** 05C15.

## 1. Introduction and Preliminaries

Let us consider the graph $G = (V, E)$ to be finite, simple and undirected. *Vertex Colouring* on a graph $G$ is an assignment of colours to the vertices of a graph so that no two adjacent vertices get the same colour. A vertex colouring of a graph is said to be *proper* if no two vertices sharing the same edge have the same colour. The *chromatic number* $\chi(G)$ of a graph $G$ is the minimum number of colours required to colour $G$ [2]. A proper vertex colouring of a graph $G$ is called *star colouring*, if every path of $G$ on four vertices is not 2 - coloured. The *star chromatic number* is the minimum number of colours required to star colour $G$ and it is denoted by