## **Shiv Nadar University**

Department of Electrical Engineering-(SoE)

**EED364:** Graph Signal Processing Lab-7 Instructor: Prof. Vijay Kumar Chakka

## I. Diffusion filters:

1. Let us consider a diffusion operator (filter),

$$R_T = e^{-TL}$$
.

Where L is the Laplacian matrix of a given Minnesota graph G and choose  $T = [1\ 2\ 3\ 4\ 5\ 6\ 7]$ .

Calculate the output  $R_T x$ , of each of these diffusion operator for a given signal x(n), defined on a graph G, where

$$R_T x = (e^{-TL})x = x * (D_T g), \ \widehat{D_T g} = \widehat{g}(T\lambda)$$
 and consider

- $x(n) = \delta_{100}$
- x(n) = 1.
- a. Plot the output of these filters on the Minnesota graph.
- b. Plot the output of the filters in a 3D plot. (Hint: use *mesh*() keyword in MATALB)
- c. Plot the output of the filters in a 2D plot. (Hint: use *imagesc*() keyword in MATALB)