

Ans 4: Shared concept of CNN is the parameters sharing of weights by all the neurons in a particular feature map. Local connectivity is the concept of each neuron connected only to a subset of the input image unlike a neural network where all the neurons are fully connected. CNN simplifies computation by reducing the number of edges and so shares the edges which means sharing the weight matrix.

$$W_1 = \begin{bmatrix} -1 & 0 & 1 \\ -1 & 0 & 1 \\ -2 & 0 & 1 \end{bmatrix} \quad W_2 = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 0 & -1 \\ 1 & 0 & -1 \end{bmatrix}$$