## **Training Workshop on Machine Vision (Image Processing Fundamentals)**

## Activity 7 – Determine output pixel value for average smoothing, median filtering and mode filtering

Learning outcome: Learn the basics of image filtering by computing the output pixel values.

*Task*: The figure below shows the pixel values at a particular location in an 8-bit image. Calculate the pixel value at location  $(i_1, j_1)$  in the output image for each of the filtering operations:

- (a) average smoothing using  $1\times3$  window
- (b) average smoothing 3×3 window
- (c) median filtering using 3×3 window
- (d) mode filtering using 3×3 window
- (e) k-nearest neighbor filtering where k = 5
- (f) sigma filtering

