# Rajarata University of Sri Lanka

**Department of Computing**

**ICT2403 - GRAPHICS & IMAGE PROCESSING**
**Class Activity -05**

**Mark whether the following statements are TRUE or FALSE.**

1. Filters can accept or reject certain frequency components. (……)
2. Enhancing/sharpening or detecting edges in image are done by suppressing the high frequencies. (……)
3. There are two types of filtering techniques available namely frequency domain filtering and the spatial domain filtering. (……)
4. Mask, convolution and filter function are the main components of spatial filter. (……)
5. Filtering always creates a new pixel values. (……)
6. If the operation performed on the image pixels is linear, then the filter is called a linear spatial filter, otherwise, the filter is non-linear. (……)
7. Spatial filtering of an image of size *M x N* with a filter of *m x n* is given by the expression of below function; Where *w* is the mask and *f* is the image function, *x* and *y* are varied so that each pixel in *w* visits every pixel in *f*. (……)

$$g(x,y) = \sum_{s=-a}^{a} \sum_{t=-b}^{b} w(s,t).f(x+s,y+t)$$

8. If the filter mask is symmetric, correlation and convolution yield the same result. (……)
9. Correlation is the process of moving a filter mask over the image and computing the product of sum at each location exactly. (……)
10. Anchor point of a filter mask should be mostly in upper left corner pixel value. (……)
11. The convolution is performed by sliding the kernel over the image generally starting at the top left corner of the image. (……)
12. The coefficients for a filter are selected based on what the filter is supposed to do. (……)
13. Non linear filters require specifying the size of the filter and the operation(s) to be performed on the image pixel contained in the filter. (……)
14. Linear and non-linear filters can be used for noise reduction. (……)
15. Average filter replaces the value of every pixel in an image by the mean of the intensity levels in the neighborhood defined by the filter mask. (……)
16. Averaging filters sharpen edges in the image, because edges represent the sharp intensity transition. (……)
17. Harmonic mean works well for salt noise, but fails for pepper noise. (……)
18. Gaussian filter is a non-uniform low pass filter. (……)

19. In Gaussian filtering at the edge of the mask, coefficients must be exactly close to ***0***. (……)
20. The response of the order static or non linear filters is based on ordering the pixels contained in the image area encompassed by the filter and then replacing the value of the center pixel with the value determine by the ranking result. (……)
21. Median filter is an ideal filter for reducing the salt and pepper noise. (……)
22. Max filter is good for salt noise and Min filter is good for pepper noise. (……)
23. Setting the average of max and min filter is denoted as midpoint filter and is good for reducing Gaussian noise. (……)
24. Alpha-trimmed mean filter good for smoothing images which are corrupted from the combination of salt, pepper and Gaussian noise. (……)
25. Removing periodic noise from an image involves removing a particular range of frequencies from that image. (……)