BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – BCA-2021
Course Name – Image Processing
Course Code - BCAD501B
(Semester V)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1.   Choose the correct alternative from the following :

(i)   To convert a continuous sensed data into Digital form, which of the following is required?

a) Sampling   b) Quantization
c) Both Sampling and Quantization   d) Neither Sampling nor Quantization

(ii) Which is the most important tool for numerous spatial domain processing techniques?

a) Histogram   b) Filtering
c) Convolution   d) None of these

(iii) We control the location of a scaled object by choosing the position is known as

a) Pivot Point   b) Fixed Point
c) Differential Scaling   d) Uniform Scaling

(iv) The image can be blurred using

a) Low-pass filter   b) High-pass filter
c) Contouring   d) Erosion(

(v)   In a nearly white image, the components of histogram are concentrated on which side of the grey scale?

a) High   b) Medium
c) Low   d) Evenly distributed

(vi) In _____ image we notice that the components of histogram are concentrated on the high side on intensity scale.

a) Bright   b) Dark
c) Colorful   d) All of the Mentioned

(vii) _____ enhance Image Differentiation?

a) Pixel Density   b) Contours
c) Edges   d) None of the mentioned

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(viii) Gausian Noise is known as

a) Red Noise
b) White Noise
c) Black Noise
d) Normal Noise

(ix) What is the maximum gray level in 8 bits?

a) 8
b) 256
c) 32
d) None of the mentioned

(x) Since the Laplacian is a derivative which of the following numbers represents the sum of the coefficients

a) 0
b) 1
c) 2
d) 3

(xi) Select the true fact(s) for the first order derivative of a digital function?

a) Must be nonzero in the areas of constant grey values.
b) Must be zero at the onset of a gray-level step or ramp discontinuities.
c) Must be nonzero along the gray-level ramps.
d) None of the mentioned.

(xii) Enhancement of differences between images is based on the principle of

a) Additivity
b) Homogeneity
c) Subtraction
d) None of these

(xiii) Which one has minimum wavelength

a) X Ray
b) Gamma Ray
c) Cosmic Ray
d) Radio Wave

(xiv) Power Law Transformation is useful for

a) Medica
b) MRI
c) Rader
d) Purification

(xv) The correction of power law response is known as

a) Alpha Correction
b) Beta Correction
c) Pixel Correction
d) Gamma Correction

Group-B
(Short Answer Type Questions)

3 x 5=15

2. Compare Lowpass and Highpass filters. (3)
3. Explain histogram equalization. (3)
4. Explain the difference between under-sampling and over-sampling in digital image processing. (3)
5. Explain the procedure for image restoration. (3)
6. Explain the concept of point detection in image processing. (3)

OR

Explain the concept of line detection in image processing. (3)

Group-C
(Long Answer Type Questions)

5 x 6=30

7. State the steps of Image restoration (5)
8. Shyam has an image of the moon which he captured via his phone. Unfortunately the image is not very sharp and the details of the craters are not easily visible. Recommend the techniques via which Shyam can sharpen the image. (5)
9. Differentiate between Linear Spatial Smoothing filters and Non-Linear Spatial Smoothing filters. (5)
10. How line detection is related to image segmentation? (5)
11. Explain Median Filter. (5)

12. Calculate 5*5 Ideal High pass filter(C)

OR

Calculate 5*5 Gaussian High pass filter

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