



## BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Sc.(CS)-Hons-2018/BCA-2019/BCA-2020

Course Name – Image Processing

Course Code - BCS503A/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) The bilinear transformation is done
- |                    |                              |
|--------------------|------------------------------|
| a) bilin           | b) bilinear()(Y)             |
| c) No such Command | d) Both bilin() and bilinear |
- (ii) To convert a continuous image  $f(x, y)$  to digital form, we have to sample the function in \_\_\_\_\_
- |                 |                  |
|-----------------|------------------|
| a) Coordinates  | b) Amplitude     |
| c) All of these | d) None of these |
- (iii) To generate a Rotation, we must specify
- |                    |  |
|--------------------|--|
| a) Rotation Angle  | b) Rotation Distance                       |
| c) Rotation Vector | d) Rotation Angle & Rotation Distance both |
- (iv) The Rotation Axis that is perpendicular to the xy plane and passes through the pivot point is known as
- |             |                |
|-------------|----------------|
| a) Rotation | b) Translation |
| c) Scaling  | d) Morphing    |
- (v) Which of the following tool is used in tasks such as zooming, shrinking, rotating, etc.?
- |                  |                          |
|------------------|--------------------------|
| a) Filters       | b) Sampling              |
| c) Interpolation | d) None of the Mentioned |
- (vi) \_\_\_\_\_ enhance Image Differentiation?
- |                  |                          |
|------------------|--------------------------|
| a) Pixel Density | b) Contours              |
| c) Edges         | d) None of the mentioned |
- (vii) \_\_\_\_\_ is a commercial use of Image Subtraction.
- |                          |                          |
|--------------------------|--------------------------|
| a) MRI scan              | b) CT scan               |
| c) Mask mode radiography | d) None of the Mentioned |
- (viii) Color transformation is processed between the
- |                       |                     |
|-----------------------|---------------------|
| a) Single color model | b) Dual color model |
| c) Tri color model    | d) Security         |
- (ix) In the Visible spectrum, the which color has the maximum wavelength



- a) Violet
- b) Blue
- c) Red
- d) Yellow
- (x) How is array operation carried out involving one or more images?
  - a) Array by array
  - b) Pixel by Pixel
  - c) Column by Column
  - d) Row by row
- (xi)  $L = 22 * 16$  would have
  - a) 2 levels
  - b) 4 levels
  - c) 6 levels
  - d) None of these
- (xii) Radio wave band encompasses
  - a) AM
  - b) PM
  - c) FM
  - d) Both AM and FM
- (xiii) The most familiar single sensor used for Image Acquisition is
  - a) Microdensitometer
  - b) Photodiode
  - c) CMOS
  - d) MOSFET
- (xiv) CAT in imaging stands for
  - a) Computer Aided Telegraphy
  - b) Computer Aided Tomography
  - c) Computerized Axial Telegraphy
  - d) Coaxial Arial Telegraphy
- (xv) Range of light intensity levels to which the human eye can adapt
  - a) 10-6 to 10-4
  - b) 10-6 to 104
  - c) 104 to 106
  - d) 4 to 6

**Group-B**

(Short Answer Type Questions)

3 x 5=15

- 2. Explain the Sobel filter. (3)
- 3. Explain Image Averaging. (3)
- 4. Compute the transformation matrix for a point along x and y axis. (3)
- 5. Compare transformation matrix between scaling and shearing (3)
- 6. Explain the Laplasian filter with a suitable example. (3)
- OR**
- Compare image properties in spatial domain with Frequency Domain (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

- 7. State the steps of Image restoration (5)
- 8. Explain Local Processing Methods. (5)
- 9. Explain Global Processing Methods (5)
- 10. Calculate 7\*7 Box Filters (5)
- 11. Draw diagram of image acquisition through array sensor. (5)
- 12. Explain the procedure for image restoration with diagram. (5)
- OR**
- How line detection is related to image segmentation? (5)

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