

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)

Branch – APPLIED ELECTRONICS

DISCIPLINE SPECIFIC ELECTIVE – II : DIGITAL IMAGE PROCESSING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

1. Identify the spatial coordinates of two-dimensional function is -----
(i) (x, y) (ii) (y, x) (iii) (f, x) (iv) (z, f)
2. Find the dpi value of book page -----
(i) 75 dpi (ii) 133 dpi (iii) 175 dpi (iv) 2400 dpi
3. Histogram manipulation is used for what?
(i) image processing (ii) image formation
(iii) image enhancement (iv) image acquisition
4. Find the filter which allow all frequencies within a circle of radius D_0 from origin and cutoff all frequencies outside this circle called ideal -----
(i) high pass filter (ii) low pass filter
(iii) band pass filter (iv) band elimination filter
5. Choose the principal sources of noise in digital images arise during image acquisition and/or transmission is -----
(i) noise model (ii) periodic noise
(iii) noise parameter (iv) noise probability
6. State which filter is constructed to pass only components associated with the interference pattern -----
(i) mean filter (ii) notch filter
(iii) adaptive filter (iv) order-statistic filter
7. Identify binary region R its boundary algorithm b_0 is the -----
(i) background point (ii) neighbor point
(iii) uppermost point (iv) preceding point
8. State the ----- used to represent a boundary by a connected sequence of straight-line segments of specified length and direction.
(i) boundary (ii) chain codes (iii) pixels (iv) grid
9. Which of the image techniques with ties to multi-resolution analysis is called -----?
(i) finite impulse response (ii) signal filtering
(iii) sign-reversed (iv) subband coding
10. Match the concept of decomposing a multilevel image into a series of binary images -----
(i) bit-plane coding (ii) chain coding
(iii) predictive coding (iv) variable length coding

SECTION - B (35 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 7 = 35)

- 11 a. Analyze the steps in Digital Image Processing.
(OR)
b. State the image sensing and acquisition.
- 12 a. Illustrate the basics of spatial filtering.
(OR)
b. Explain the Butterworth filter.
- 13 a. Classify the band pass and band reject filter.
(OR)
b. Apply the region based segmentation, in an image and give the result.

Cont...

- 14 a. Recommended the signature boundary segments.
(OR)
b. Evaluate the recognition based on matching.
- 15 a. Justify the multi-resolution expansion.
(OR)
b. Show the lossless predictive coding in detail write up.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks

(3 x 10 = 30)

16. Elucidate the relationship between pixels and color models.
17. Criticize the gray level transformations and histogram processing.
18. Formulate the points on morphological processing.
19. Interpret the boundary segment and shape number.
20. Justify how the compression standards, is better.

Z-Z-Z

END