(6 pages) Reg. No. : .....

Code No. : 20335 E **Sub. Code : AMCS 64**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023

Sixth Semester

Computer Science – Core

INTRODUCTION TO DIGITAL IMAGE PROCESSING

(For those who joined in July 2020 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Continuous functions are sampled to form a _____

(a) Fourier series
(b) Fourier transform
(c) Fast Fourier series
(d) Digital image

2. The spatial coordinates of a digital image (x, y) are proportional to _____

(a) Position (b) Brightness
(c) Contrast (d) Noise

3. The range of values spanned by the gray scale is called _____

(a) Dynamic range (b) Band range
(c) Peak range (d) Resolution range

4. Which of the following is the primary objective of sharpening of an image?

(a) Blurring the image
(b) Highlight fine details in the image
(c) Increase the brightness of the image
(d) Decrease the brightness of the image

5. Which is a colour attribute that describes a pure colour?

(a) Saturation (b) Hue
(c) Brightness (d) Intensity

6. What is pixel?

(a) Pixel is the elements of a digital image
(b) Pixel is the elements of an analog image
(c) Pixel is the cluster of a digital image
(d) Pixel is the cluster of an analog image

7. The number of grey values are integer powers of _____

(a) 4 (b) 2
(c) 8 (d) 1

8. If inner region of object is textured then approach we use is _____

(a) discontinuity (b) similarity
(c) extraction (d) recognition

9. Approach to restoration is _____

(a) inverse filtering (b) spike filtering
(c) black filtering (d) ranking

10. Enhancement of differences between images is based on the principle of _____

(a) Additivity (b) Homogeneity
(c) Subtraction (d) None of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the definition of image and digital image processing?

Or

(b) Describe the zooming and shrinking of digital image.

12. (a) Elaborate the basic gray level transformation.

Or

(b) Summarize the one dimensional Fourier transform and its inverse.

13. (a) Write down the advantages of color image processing.

Or

(b) Discuss the purpose of color segmentation.

14. (a) Explain the different types of compression strategies.

Or

(b) Write the logic operations involving binary images.

15. (a) Bring out the general features of an image.

Or

(b) What are the attributes of features? Explain.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Examine the techniques of image acquisition with diagram.

Or

(b) Draw and explain the architecture of simple image model.

17. (a) Outline the image enhancement using arithmetic and logical operation.

Or

(b) Formulate the basic frequency domain filters.

18. (a) Determine the pseudo color image processing with diagram.

Or

(b) Evaluate the functions of color transformation.

19. (a) Discuss the image compression model with diagram.

Or

(b) Explain the dilation and erosion in morphological image processing.

20. (a) Demonstrate the complete process of feature extraction.

Or

(b) Illustrate the methods of region based segmentation.

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