V(5th Sm.)-Computer Sc.-H/DSE-A-1/CBCS

2021

COMPUTER SCIENCE — HONOURS

Paper : DSE-A-1

(Digital Images Processing)

Full Marks : 50

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Answer question number 1 and any four from the rest.

1. Answer any five questions :

- (a) What is sampling?
- (b) What are the hue and saturation?
- (c) What do you mean by image negative?
- (d) What do you mean by image enhancement?
- (e) What is a median filter?
- (f) How a digital image can be converted into negative?
- (g) Find the Euclidean distance between two pixels P (134, 145) and Q (20, 112).
- (h) Write down four different storage file extensions of digital images.
- 2. (a) Why sampling and quantization are required in image processing?
 - (b) Explain, in brief, about local and global thresholding method.
 - (c) Discuss about intensity level slicing operation.
- 3. (a) Explain the concept of geometric transformation for image restoration.
 - (b) Discuss the following relationships between pixels with neat diagrams :
 - (i) Neighbours of a pixel
 - (ii) Distance measures
 - (iii) Path.
- 4. (a) Discuss about applications of image subtraction and image multiplication operations.
 - (b) Write the mask for Prewitt and sobel operator.
 - (c) How log transformation function can be used for changing intensity values of pixels? Explain clearly.
 3+3+4

Please Turn Over

 2×5

4+4+2

4+6

V(5th Sm.)-Computer Sc.-H/DSE-A-1/CBCS

- 5. (a) Explain Hough Transformation. Explain its utility.
 - (b) Define spatial filtering.
- 6. Write short notes on the following :
 - (a) Canny edge detection
 - (b) Region growing.
- 7. (a) Discuss about Intensity Level Slicing operation.
 - (b) What is the difference between an RGB image and a grey image? How an RGB image can be converted to grey? 4+6
- 8. (a) Why histogram equalization is required for digital image processing?

(b) Equalize the following histogram :

Grey Level	0	1	2	3	4	5	6	7
No. of Pixel	790	1023	850	656	329	245	122	81

5+5

5+2+3

5+5

(2)