

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Digital Image Processing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With a neat diagram, explain the fundamental steps in image processing. (10 Marks)
 b. Explain the components of an image processing system. (10 Marks)

OR

- 2 a. Explain the concept of sampling and quantization in image processing. (10 Marks)
 b. With a neat diagram of the eye, explain the human visual system working. (10 Marks)

Module-2

- 3 a. Explain piece-wise linear transformation functions. (10 Marks)
 b. Discuss the following frequency domain filters:
 i) Ideal HPF
 ii) Butterworth HPF
 iii) Gaussian high pass filters. (10 Marks)

OR

- 4 a. Explain the following:
 i) Image negatives
 ii) Log transformations
 iii) Power law transformations. (10 Marks)
 b. Draw the block diagram of homomorphic filtering for image enhancement and explain it. (10 Marks)

Module-3

- 5 a. Explain the basic model of image restoration process. Also with necessary equation the PDF's in an image processing. (10 Marks)
 b. With necessary mathematical equations explain inverse filtering and weiner filtering for image restoration. (10 Marks)

OR

- 6 a. What are three methods of estimating the degradation function? Explain each of the process. (10 Marks)
 b. Discuss adaptive median filtering method for image restoration. Also give its advantages. (10 Marks)

Module-4

- 7 a. Explain the procedure for converting from RGB to HSI and vice versa. (10 Marks)
 b. Explain erosion and dilation in image processing. (10 Marks)

OR

- 8 a. Write a note on pseudo color image processing. (10 Marks)
b. Explain opening and closing in image processing. (10 Marks)

Module-5

- 9 a. Explain Roberts operator and sobel operator. (10 Marks)
b. Explain Laplacian of Gaussian operation (LOG) and difference of Gaussian filter. (10 Marks)

OR

- 10 a. Explain set theory operations like :
i) Complement
ii) Translators
iii) Unions
iv) Intersection
v) Reflection. (10 Marks)
- b. Explain global thresholding algorithms of optimal otsu thresholding algorithms. (10 Marks)
