

FACULTY OF ENGINEERING & TECHNOLOGY

BE(EC/ECT/IEC/E&C)Examination - DEC – 2014

DIGITAL IMAGE PROCESSING(Revised)

[Time: THREE Hours]

[Max. Marks: 80]

"Please check whether you have got the right question paper."

1. Q. 5 and Q10 are compulsory.
2. Solve three questions from each section.
3. Figure to the right indicate full marks.
4. Assume suitable data wherever. Necessary and mention if clearly.

SECTION A

- Q 1 a) Explain the different element of digital image processing system with neat diagram. (08)
 b) Define image? Enlist type of image and explain in detail. (07)
- Q2 a) Explain the properties of 2D Fourier transform. (07)
 b) Specify the objective of image enhancement technique and explain gray level transformation used for image enhancement in detail. (08)
- Q3 a) Explain different separable transform in detail (07)
 b) Equalize the histogram of the 8×8 image with values give in below table. The image has gray levels from 0 to 7. Draw histogram with and without equalization. (08)

Input gray level	0	1	2	3	4	5	6	7
n_k	8	12	20	15	5	4	0	0

- Q4 a) Define pixel? Explain any four basic relationships between pixels. (08)
 b) Explain different smoothing filters in frequency domain. (07)
- Q5 Write a short note (any two) (10)
 i) Sampling and quantization.
 ii) Slant transform.
 iii) Histogram processing

SECTION-B

- Q6 a) What is segmentation? How the derivatives are obtain in edge detection during formulation. (08)
 b) What are the various methods of thresholding for image segmentation? (07)
- Q7 a) Generate the tag for the sequence 1 3 2 1 for the probabilities $P(1)=0.8$, $P(2)=0.02$, $P(3)=0.1813$. How an image is compressed using JPEG image compression standard? (08)
 b) Explain the need of image compression. How run length encoding approach is used for compression .is it lossy? Justify. (07)
- Q8 a) Explain the following with example (08)
 i) Dilation.
 ii) Erosions.
- b) Write a code to perform morphological operation on gray scale images. (07)
- Q9 a) What are the three types of discontinuity in digital image? Explain any-one in detail. (07)
 b) Define compression ratio? Explain any one coding methods for image compression. (08)
- Q10 Write a short note (any two) (10)
 1) application of biometric
 2) JPEG standards
 3) Chain code.