PAPER ID-310755

Subject Code: KEC071

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2023-24
DIGITAL IMAGE PROCESSING

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

Q no.	Question	Marks	CO
a.	Explain the application areas of image processing.	2	1
b.	Enlist the types of images in DIP.	2	1
c.	What is homomorphic filtering?	2	2
d.	Explain the concept of image smoothing and sharpening spatial & frequency domain filters.	2	2
e.	What is Fourier transform? Explain its properties.	2	3
f.	Explain the need for image transforms.	2	3
g.	Highlights the image and video compression standards.	2	4
h.	What is image compression? How is it done?	2	4
i.	What do you mean by eigen values and eigen vectors?	2	5
j.	Explain the process of image segmentation.	2	5

SECTION B

2. Attempt any *three* of the following:

a.	Explain the Digital Image Processing Operations. What are the fundamental steps in DIP? Give the overview of Digital Image Systems.	10	1
b.	What is image degradation? Explain the types of image degradations and image degradation models.	10	2
c.	Differentiate Hadamard transform, Haar transform and Slant transform.	10	3
d.	Explain the image compression model and types of redundancy.	10	4
e.	Explain the principle of thresholding and region - growing in DIP.	10	5

SECTION C

3. Attempt any *one* part of the following:

a.	Explain physical aspect of image acquisition and biological aspect of image acquisition in DIP.	10	1
b.	Explain the process of sampling & quantization.Also discuss digital halftone process, image storage and its file formats.	10	1

4. Attempt any *one* part of the following:

a.	Explain the need for image enhancement and its operations. Discuss image enhancement in spatial domain.	10	2
b.	Discuss the noise modeling and estimation of degradation functions. Also explain image restoration in presence of noise only.	10	2

5. Attempt any *one* part of the following:

a.	Discuss the SVD and KL transforms.	10	3
b.	Explain the discrete cosine transform and discrete sine transform. Compare the performance of both.	10	3

6. Attempt any *one* part of the following:

a.	Compare lossless compression and lossy compression algorithms.	10	4
b.	Explain compression algorithms and its types.	10	4

7. Attempt any *one* part of the following:

a.	Discuss edge detection, Hough transforms and shape detection.	10	5
b.	Explain detection of discontinuities in image segmentation. Also discuss corner detection.	10	5