

## Course Name: Digital Image Processing (BOCS-704(B))

### Course Outcomes (CO):

After completion of the course students will be able to

1. Describe Develop a theoretical foundation of fundamental Digital Image Processing concepts.
2. Provide mathematical foundations for digital manipulation of images; image acquisition; preprocessing;• segmentation; Fourier domain processing; and compression.
3. Gain experience and practical techniques to write programs using MATLAB language for digital• manipulation of images; image acquisition; preprocessing; segmentation; Fourier domain processing; and compression

**Model Question Paper**  
**Total Duration (H:M): 3:00**  
**Course: Digital Image Processing**  
**Maximum Marks: 100**

Q.No	Questions	Marks	CO	BL	PI
1(a)	Suppose we wish to capture your image , where each image contains its specific information. How might we take advantage of the Digital Image Processing for maximum specific information capture ?	4	CO3	L3	1.4.1
1(b)	With the help of suitable diagram and most useful techniques describe components of image processing system	6	CO2	L2	1.4.1
1(c)	Using the various techniques suggest most suitable fields of DIP.	10	CO1	L2	1.4.1
2(a)	Differentiate between spatial domain and frequency domain with suitable example.	4	CO1	L3	1.4.1
2(b)	Design using modern techniques of DIP an image acquisition system.Draw diagram.	6	CO3	L3	1.4.1
2(c)	Write steps for filtering in frequency domain using any best filter.	10	CO3	L4	1.4.1

Q.No	Questions	Marks	CO	BL	PI
3(a)	What are the benefits of DIP over the other traditional methods' for better image restoration and storage.	4	CO2	L1	1.4.1
3(b)	What are Linear and Non Linear Operations.Give Examples of each	6	CO1	L3	1.4.1
3(c)	Write the techniques to implement the following using wavelets <ul style="list-style-type: none"> <li>• Image Denoising</li> <li>• Image Resoration</li> </ul>	10	CO3	L3	1.4.1
4(a)	You have been invited to a talk on Digital Image Processing i) Which tools you use for interactive session? Justify. ii) How you communicate your explanation practically to everyone To what extent of latest technologies in DIP does this talk cover in 1 hour? Justify.	4	CO3	L6	1.1.2
4(b)	What are histogram .Why they are required in DIP? Justify youranswer.	6	CO3	L3	1.4.1
4(c)	Apply 2D DFT for 4×4 diagnol matrix  What are their benefits ? On what practical issues does the 2D DFT applied? Explain.	10	CO2	L3	1.4.1
5(a)	Bring out the differences between DFT and 2D DFT . Also compare with respect to computational analysis.	4	CO4	L2	1.4.1
5(b)	Write a function for given below description: ALGORITHM Image Smoothing(I) // I is the image inputted by the user	6	CO3	L3	1.4.1

Q.No	Questions	Marks	CO	BL
5(c)	Apply DIP techniques on the following: “Sattellite launch system Write the main steps of it	10	CO1	L3
6(a)	Write the image sensing steps for the given below problems: i) Tracking System of robot ii) Reservation System using image iii) Expert System for image based diagnosis of disease iv) Government Ids holding using image	4	CO3	L2
6(b)	A DNA sequence consists of a text on the alphabet {A, C, G, T} and the gene or gene segment is the pattern. For the pattern for chromosome-10: TCCTATTCTT construct the following image using different colors write all the steps .	6	CO3	L3
6(c)	Write a function for Gas Weiner Filtering. Suitably comment the code explaining each of the line	10	CO3	L3
7(a)	What are the benefits of segmentation?	4	CO2	L1
7(b)	Explain morphological algorithms with help of a suitable program. Explain each of them in detail.	6	CO2	L3
7(c)	What is Edge Detection? Why it is necessary. Write and explain most useful techniques of it.	10	CO2	L3
8(a)	What do you mean by boundary descriptors?	4	CO3	L1
8(b)	Differentiate between the MSE and MMSE	6	CO3	L2
8(c)	With a help of a suitable diagram explain the concept of wavelets and how they can be used as an efficient DIP tool	10	CO2	L3