

**B.Tech. SEM -VII Bio Medical 2014 Course (CBCS) : SUMMER - 2019**  
**SUBJECT: IMAGE PROCESSING**

Day : Saturday  
Date : 11/05/2019

S-2019-2851

Time : 02.30 PM TO 05.30 PM  
Max Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data, if necessary.

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- Q.1 a) How does image sampling and quantization take place? (05)  
b) Describe the basic relationship between pixels. (05)

**OR**

- Q.1 What is Digital Image Processing? Describe the various applications. (10)

- Q.2 a) What are the mathematical operations used in Digital Image Processing? (05)  
b) How smoothing filters are used for blurring and noise reduction? (05)

**OR**

- Q.2 Describe Histogram and Histogram processing in detail. (10)

- Q.3 a) Describe a simple system for creating approximation and prediction residual pyramids. (05)  
b) Derive Wavelet series Expansion. (05)

**OR**

- Q.3 What is image compression? Describe Huffman coding for removing coding redundancy. (10)

- Q.4 a) Describe method of Digital Image Watermarking. (05)  
b) Discuss the role of structuring element in morphological operations. (05)

**OR**

- Q.4 Elaborate the following morphological operations: (10)  
i) Erosion and Dilation  
ii) Opening and Closing

- Q.5 a) Describe the region growing procedure that group pixels or sub region into larger regions. (05)  
b) How to construct the dams or watershed lines required by watershed segmentation algorithm? (05)

**OR**

- Q.5 Illustrate the edge models and detection of isolate points in image segmentation. (10)

- Q.6 a) Describe the concept of Image Recognition. (05)  
b) Write a note on Graphic Interchange Format (GIF). (05)

**OR**

- Q.6 Discuss the method of Iris Recognition. (10)

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