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**Question Paper Code:97B03**

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Seventh Semester

Biomedical Engineering

19UBM703- Image processing techniques

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. How is image acquisition done in a digital image processing? CO1- U
2. Write the expression to find the number of bits to store a digital image CO1- U
3. Define contrast stretching CO1- U
4. Define intensity level slicing CO1- U
5. Classify the types of noise models? CO2- App
6. Demonstrate the formula for gaussian noise CO2- App
7. Define compactness. CO1- U
8. Demonstrate the formula for diameter of boundary. CO2- App
9. Define bit plane coding. CO1- U
10. Define run length coding. CO1- U

PART – B (5 x 16= 80Marks)

11. (a) Illustrate the basic relationships between pixels in detail with suitable examples. CO3- Ana (16)
- Or
- (b) Explain the color model which is suitable for hardware implementation with neat diagram. CO3- Ana (16)

12. (a) Write short notes on the following terms along with a neat diagram. CO1- U (16)  
(i) Image negatives  
(ii) Log transformations  
(iii) Power law transformations  
Or
- (b) Explain image sharpening and smoothing filters in spatial domain. CO1- U (16)
13. (a) Illustrate how the estimation of degradation function is done in detail. CO3-Ana (16)  
Or
- (b) Illustrate the minimum mean square error filtering in detail. CO3-Ana (16)
14. (a) Demonstrate how edge detection performed? Explain how transform and discuss how the edge points are linked. CO2- App (16)  
Or
- (b) Assess how an image is segmented using region splitting and merging algorithm in detail and how the segmented object is represented by chain codes. CO2- App (16)
15. (a) Explain any four image recognition methods in detail. CO1- U (16)  
Or
- (b) Define image compression? Explain any four variable length coding Compression schemes. CO1- U (16)