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Question Paper Code : X 60173

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020
Sixth Semester
Medical Electronics Engineering
BM 3314/080290042 – DIGITAL IMAGE PROCESSING
(Common to Electronics and Communication Engineering)
(Regulations 2008)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What is mach band effect ?
2. Define quantization error. How this can be minimized ?
3. State the properties of 2D-FFT.
4. Write notes on Slant transform.
5. What is image averaging ?
6. What is the principle of image restoration ?
7. How the edges are detected using Derivative operators ?
8. How the signature is used to represent an image ?
9. What is the need for data compression ?
10. What are the basic blocks in a general image compression system ?

PART – B **(5×16=80 Marks)**

11. a) Explain a general purpose IPS. How this is made analogous to visual perception ? Discuss.

(OR)

b) Describe non-uniform and uniform sampling and quantization. Are they applicable for color images ? How are they used in RGB models ?

12. a) Explain the need of kernel for DCT in 1D and 2D. Describe how this is used for image compression.

(OR)

b) What are the applications of slant and Haar transforms ? Explain Haar wavelet transformation. How this is used in energy compaction ?

13. a) i) Describe the following gray level transformation functions : Contrast stretching, Intensity level slicing and bit plane slicing. **(12)**

ii) Compare the above transformation with log transformation. **(4)**

(OR)

b) i) Explain the unconstrained method of image restoration. **(12)**

ii) Describe the principle of inverse filtering. **(4)**

14. a) How Laplacian edge detection works for an image ? Describe how the edge detection is used for image segmentation ? Illustrate.

(OR)

b) Explain 4 and 8 directional chain code representation for boundaries.

15. a) Discuss about bit plane slicing and LZW coding. **(16)**

(OR)

b) Explain the standard JPEG. **(16)**

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