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VARDHAMAN COLLEGE OF ENGINEERING (AUTONOMOUS)

III B. Tech I Semester Supplementary Examinations, May – 2022

(Regulations: VCE-R19)

IMAGE PROCESSING (Information Technology)

Date: 25 May, 2022 AN

Time: 3 hours

Max Marks: 100

Answer All Questions

PART-A

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|----|----|---|-----------|
| 1. | a) | What is meant by image segmentation? Write its use in image processing. | 3M |
| | b) | Why image transform is needed? | 3M |
| | c) | What are the properties of DFT? | 3M |
| | d) | What is the need of HADAMARD transform? | 3M |
| | e) | What is image compression? Why it is needed? | 3M |
| | f) | Define Sharpening Spatial Filter. | 3M |
| | g) | What is meant by image restoration? | 3M |
| | h) | What is meant by Moire patterns? Explain. | 3M |
| | i) | Define pseudo color image. | 3M |
| | j) | Define the following terms: | 3M |
| | | i. Image | |
| | | ii. Pixel | |

PART-B

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|----|----|--|-----------|
| 2. | a) | Explain in detail about image sampling and quantization. | 7M |
| | b) | Describe the various basic relationships between pixels. | 7M |
| | | (OR) | |
| | c) | Describe the Image Reading function with an example. | 7M |
| | d) | Explain Fundamental Steps in Digital Image Processing. | 7M |
| 3. | a) | Justify the statement “Walsh Transform kernels are seperable and symmetric”. | 7M |
| | b) | What is the need of image transform? List out various transforms used in image Processing. | 7M |
| | | (OR) | |
| | c) | Prove that both the 2-D continuous and discrete Fourier transforms are linear Operations. | 7M |
| | d) | State 2D sampling theorem and explain about aliasing in images. | 7M |
| 4. | a) | Illustrate Bit-plane representation of an 8-bit image. | 7M |
| | b) | Using Laplacian operator explain image sharpening. | 7M |
| | | (OR) | |
| | c) | Enumerate mechanics of filtering in spatial domain. | 7M |
| | d) | What is an adaptive median filter? Explain its use for noise reduction in an image. | 7M |
| 5. | a) | How noise reduction can be done to an image using band reject band pass filters. | 7M |
| | b) | Describe the concept of smoothening filters in frequency domain. | 7M |
| | | (OR) | |
| | c) | Write a short notes on the following filters: | 7M |
| | | i. Band reject and Band pass filters | |
| | | ii. Notch filters | |
| | d) | Demonstrate the significance of thresholding in image segmentation. | 7M |
| 6. | a) | Explain the procedure of converting colors from RGB to HIS. | 7M |
| | b) | Describe the image compression models with a neat diagram. | 7M |
| | | (OR) | |
| | c) | Briefly discuss Hue and saturation in the HSI color model. | 7M |
| | d) | Briefly explain Source encoder and decoder technique. | 7M |