Short Questions

1. What is the process of digitizing an image through a scanner?
2. How does a digital camera capture images?
3. Explain the concept of gray levels in digital images.
4. What is the process of converting gray levels to a binary image?
5. Define sampling in the context of digital images.
6. What is quantization, and how does it relate to digital image processing?
7. Explain the relationship between pixels in a digital image.
8. Describe the concept of imaging geometry.
9. What are 2D transformations in digital image processing?
10. What is the Discrete Fourier Transform (DFT) in image processing?
11. How does the Discrete Cosine Transform (DCT) differ from the DFT?
12. Explain the concept of Karhunen-Loève Transform (KLT) in digital image processing.
13. What are the key components of a digital camera?
14. How does the concept of resolution relate to digital images?
15. Describe the process of pixel interpolation in digital images.
16. What factors influence the quality of digital images captured by a digital camera?
17. Explain the concept of dynamic range in digital imaging.
18. How does noise affect digital images, and what methods are used to reduce it?
19. Discuss the concept of color depth in digital images.
20. What is the significance of image compression in digital imaging?
21. Describe the process of color space conversion in digital imaging.
22. How does anti-aliasing improve image quality in digital imaging?
23. Explain the concept of pixel aspect ratio in digital imaging.
24. What role does metadata play in digital images?
25. How does gamma correction affect digital images?
26. Describe the process of color calibration in digital imaging.
27. What are the advantages of using raw image format in digital photography?
28. Explain the concept of Bayer filter in digital imaging.
29. How does white balance adjustment improve color accuracy in digital images?
30. Discuss the concept of image histogram in digital imaging.
31. How does image resolution affect the printing quality of digital images?
32. Describe the role of gamma encoding in digital imaging.

33. What are the benefits of using lossless compression in digital imaging?
34. Explain the concept of edge detection in digital image processing.
35. How does image registration improve the quality of digital images?
36. Discuss the importance of image metadata in digital forensics.
37. What are the advantages of using image enhancement techniques in digital imaging?
38. Explain the concept of morphological operations in digital image processing.
39. How does image segmentation assist in object recognition in digital imaging?
40. Describe the role of image restoration techniques in digital imaging.
41. What is the role of a demosaicing algorithm in digital imaging?
42. How does the concept of dynamic range compression impact digital imaging?
43. Describe the concept of non-uniform sampling in digital imaging.
44. What are the advantages of using logarithmic encoding in digital imaging?
45. Explain the concept of color gamut in digital imaging.
46. How does the concept of visual saliency assist in image processing?
47. Discuss the role of image inpainting in digital image restoration.
48. What are the challenges associated with image fusion in digital imaging?
49. Explain the concept of image deconvolution in digital image processing.
50. How does the concept of image registration assist in multi-modal medical imaging?
51. What is the fundamental principle behind point processing in image enhancement?
52. How does histogram equalization enhance an image?
53. What are the characteristics of spatial filtering in image enhancement?
54. Describe the process of image smoothing in the spatial domain.
55. How does image sharpening enhance edge details?
56. What role does frequency domain analysis play in image enhancement?
57. Explain the concept of spatial domain point processing in image enhancement.
58. How does spatial filtering differ from point processing in image enhancement?
59. Discuss the advantages of histogram processing in image enhancement.
60. What techniques are commonly used for image enhancement in the frequency domain?
61. How does gamma correction affect image enhancement in the spatial

domain?
62. Explain the concept of adaptive histogram equalization in image enhancement.
63. What are the differences between linear and non-linear spatial filtering techniques?
64. How does Gaussian smoothing differ from median filtering in image enhancement?
65. Discuss the concept of high-pass filtering in image sharpening.
66. What are the advantages of Fourier analysis in image enhancement?
67. Describe the role of edge detection in image enhancement.
68. How does histogram specification differ from histogram equalization in image enhancement?
69. Explain the concept of Laplacian sharpening in image enhancement.
70. What role does the Sobel operator play in image enhancement?
71. How does contrast stretching improve image quality in the spatial domain?
72. Discuss the concept of spatial frequency in image enhancement.
73. What are the limitations of linear spatial filtering techniques?
74. Explain the concept of histogram matching in image enhancement.
75. How does Wiener filtering improve image quality in the frequency domain?
76. Discuss the advantages of anisotropic diffusion in image enhancement.
77. What role does the Fourier transform play in image enhancement?
78. How does histogram matching differ from histogram equalization?
79. Explain the concept of morphological filtering in image enhancement.
80. What are the advantages of using wavelet transforms in image enhancement?
81. Describe the process of edge enhancement in spatial domain processing.
82. How does local contrast enhancement differ from global contrast enhancement?
83. Discuss the advantages of non-linear spatial filters in image enhancement.
84. Explain the concept of frequency domain filtering in image enhancement.
85. What are the limitations of direct histogram equalization in image enhancement?
86. How does adaptive filtering improve image enhancement in noisy environments?
87. Discuss the role of spatial domain operations in image enhancement.
88. What are the advantages of using bilateral filtering in image enhancement?
89. How does non-linear contrast enhancement differ from linear contrast enhancement?

90. Explain the concept of image sharpening using unsharp masking.
91. How does histogram stretching differ from histogram equalization in image enhancement?
92. Discuss the concept of spatial domain filtering in image enhancement.
93. What are the advantages of using median filtering over mean filtering for noise reduction?
94. Explain the concept of image enhancement using the Laplacian of Gaussian (LoG) operator.
95. How does adaptive contrast enhancement improve image quality in varying lighting conditions?
96. Discuss the advantages of using frequency domain filtering over spatial domain filtering for image enhancement.
97. Explain the concept of non-local means filtering in image enhancement.
98. What role does edge-preserving smoothing play in image enhancement?
99. How does multi-scale image enhancement improve feature representation and recognition?
100. Discuss the challenges associated with image enhancement in low-light conditions.
101. What is an image degradation model?
102. How does noise affect image restoration?
103. Describe the algebraic approach to image restoration.
104. What is the role of the degradation function in image restoration?
105. How does inverse filtering contribute to image restoration?
106. What are the challenges associated with inverse filtering?
107. Explain the concept of Wiener filtering in image restoration.
108. How does Wiener filtering address the trade-off between noise suppression and detail preservation?
109. Discuss the limitations of algebraic approaches to image restoration.
110. What are some common methods for estimating the degradation function in image restoration?
111. How does regularization help improve the stability of image restoration algorithms?
112. Explain the concept of iterative restoration algorithms.
113. How do spatial domain restoration techniques differ from frequency domain techniques?
114. Discuss the impact of blur on image restoration.
115. What factors influence the choice of restoration algorithm for a given image?

116. Describe the role of the point spread function (PSF) in image restoration.
117. How does the presence of noise affect the choice of restoration method?
118. What is deconvolution in the context of image restoration?
119. Explain the concept of blind deconvolution.
120. How does the choice of regularization parameter affect the outcome of iterative restoration algorithms?
121. Describe the concept of non-blind deconvolution.
122. What role does the noise power spectrum play in image restoration?
123. How does the presence of outliers impact the performance of restoration algorithms?
124. Discuss the importance of spatial regularization in image restoration.
125. How does the choice of restoration method vary for different types of images (e.g., medical images vs. natural scenes)?