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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Accelerated Semester

MID TERM EXAMINATION- 2026

B.Tech-VII Semester (CSE/IT/CE/BT/BI)

COURSE CODE (CREDITS): 21B1WEC731 (3) MAX. MARKS: 50

COURSE NAME: DIGITAL IMAGE PROCESSING USING PYTHON

COURSE INSTRUCTORS: Dr. NISHANT JAIN MAX. TIME: 2 Hours

Note: *(a)All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Calculator is not allowed

Q.No	Question	CO	Marks
Q1	Explain the process of image acquisition and discuss the factors that influence the quality of acquired images.	1	5
Q2	Differentiate between intensity resolution and spatial resolution in digital images. Why are both important in image processing?	1	5
Q3	Describe how to crop, resize, and rotate images using OpenCV. Provide practical examples and discuss the significance of each operation.	3	5
Q4	A= $\begin{array}{\|c\|c\|c\|c\|c\|} \hline 100 & 200 & 140 & 140 & 100 \\ \hline 100 & 200 & 140 & 140 & 100 \\ \hline 200 & 130 & 130 & 100 & 180 \\ \hline 200 & 150 & 150 & 100 & 180 \\ \hline 100 & 150 & 150 & 100 & 180 \\ \hline \end{array}$ Create the histogram for the image A provided above. Based on the histogram, what conclusions can be made regarding the image's contrast?	2	5
Q5	Explain spatial domain processing techniques for image enhancement. Provide examples such as smoothing and sharpening filters.	2	5
Q6	Explain the importance of image resolution in medical imaging applications. How do sampling and quantization influence diagnostic accuracy?	1	5
Q7	Describe the process of converting an RGB image to grayscale in Python using OpenCV. Why is grayscale conversion important?	3	5

Q8	Discuss the challenges involved in real-time image processing applications.	1,2	5
Q9	Explain the concept of contrast stretching in image enhancement.	2	5
Q10	Discuss the various practical applications of image processing across different fields such as medical imaging.	1,2	5