JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech-7th Semester (ECE)/ ~~5th Semester (BI)~~

COURSE CODE (CREDITS):18B1WEC847/~~23B1WBI531 (3)~~ MAX. MARKS: 15

COURSE NAME: Medical Image Processing/ ~~Computational Biomedical Image Analysis~~

COURSE INSTRUCTOR:Lt.(Dr.) Pragya Gupta MAX. TIME: 1 Hour

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

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

(c) Use of a calculator is allowed

Q.No	Question	CO	Marks
Q1	Consider the 5x5 image region. Let V={1,2}. Compute D_c, D_4, D_8, and D_m distances between pixel p and q.	CO2	1+1+1+2
Q2	(a) Briefly explain the working principles of CT (Computed Tomography) and mention limitations of CT scan. (b) Mention two application areas of Gamma-ray imaging in medicine.	CO1	3+1
Q3	(a) A 6-bit grayscale image. For a pixel having intensity r=25, calculate its intensity after applying the negative transformation. (b) What is meant by power law transformation? Write its mathematical expression. (c) An MRI image appears too dark, causing some important information to be hidden. For enhancing the dark regions, should the value of γ in power-law transformation be greater than 1 or less than 1?	CO2	1+1+1
Q4	(a) Explain the concepts of sampling and quantization in the formation of a digital image. (b) How does sampling affect the spatial resolution of an image? (c) How does quantization affect the intensity resolution of an image?	CO2	1+1+1

1(q)	2	3	4	0
5	3	2	1	1
4	2	1	1	0
3	1	0	2	5
1	2	0	3	**1(p)**

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