JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-6th Semester (ECE)

COURSE CODE (CREDITS):18B1WEC847 (3) MAX. MARKS: 15

COURSE NAME: Medical Image Processing

COURSE INSTRUCTORS: Lt. Praggya 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

Q.No	Question	CO	Marks
Q1	(a) Briefly explain the working principles of CT (Computed Tomography) and MR (Magnetic Resonance) Imaging. (b) Mention one limitation of each modality.	CO1	2+1
Q2	(a) Discusses different approaches for region merging with example. (b) Explain the region splitting and merging algorithm step by step.	CO2	2+2
Q3	Compute the response of the Kirsch edge detection mask for the north direction when applied to the following 3×3 image region: $\begin{bmatrix} 8 & 12 & 16 \\ 20 & 24 & 28 \\ 32 & 36 & 40 \end{bmatrix}$	CO2	2
Q4	Why is LoG (Laplacian of Gaussian) edge detection more effective for detecting fine edges than Robinson and Kirsch operators? What is its main limitation?	CO2	3
Q5	What is edge linking, and why is it necessary in image processing? Briefly explain how Hysteresis Thresholding helps in edge linking after edge detection.	CO2	3