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**Department of Research & Development**  
**Mid - Term Examinations - SEPTEMBER 2024**

<b>Odd Semester:</b> Ph.D. Course Work	<b>Date:</b> 28 /09/2024
<b>Course Code:</b> CSE 5020	<b>Time:</b> 2:00pm – 3:30pm
<b>Course Name:</b> Medical Image Processing	<b>Max Marks:</b> 50
<b>Department:</b> PSCS & PSIS	<b>Weightage:</b> 25%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

**Part A**

<b>Answer ALL the Questions. Each question carries 5 marks.</b>		<b>4Qx5M=20M</b>
1	What are the different types of digital images based on pixel values? Also explain the role of pixels in forming a digital image with an example. [CO1]	5 Marks
2	How is biomedical image processing used for disease diagnosis and treatment planning? Explain with an example. [CO1]	5 Marks
3	What is the importance of noise reduction in medical imaging, and how does it improve diagnostic accuracy? [CO2]	5 Marks
4	What is feature extraction in image processing, and why is it important for image analysis? [CO2]	5 Marks

**Part B**

<b>Answer ALL Questions. Each question carries 15 marks.</b>		<b>2QX15M=30M</b>
5	Apply biomedical image processing techniques to the analysis of 3D medical images (e.g., MRI or CT scans). Discuss how image segmentation and feature extraction would assist in diagnosing complex conditions like tumors. [CO1]	15 Marks
6	A CT scan has significant noise due to low radiation dose. Design a process to reduce this noise while preserving diagnostic information. Discuss the steps involved, the types of noise you expect, and how you would select appropriate noise reduction filters. [CO2]	15 Marks