**BSc(H) Computer Science (Semester – V)**

**DSE: Digital Image Processing**

**Assignment – 1**

**Instructions**

* **The assignment has to be submitted individually**
* **Deadline: 6 November 2022**
* **The submission will be in the form of a word or PDF document**

Q1) Implement the JPEG compression algorithm. JPEG uses the DCT Transform. Create three versions of the algorithm: 1) Using the standard DCT Transform, 2) Using Fourier Transform, 3) Using Wavelet Transform.

Compare the performance of the three versions after application of the compression scheme on an image. The comparison will be on the basis of the standard compression performance indices used. (Paste your code and output in the file to be submitted)

Q2) Refer to the paper Sarma, Rituparna, and Yogesh Kumar Gupta. "A comparative study of new and existing segmentation techniques." *IOP Conference Series: Materials Science and Engineering*. Vol. 1022. No. 1. IOP Publishing, 2021. It presents a number of image segmentation techniques; select any of these and describe the working of the algorithm. Implement and apply the algorithm on an image. (Paste your code and output in the file to be submitted)

Q3) Refer to any recent research publication on low pass/high pass filtering on images. Describe the algorithm used. Present an analysis of the same and enumerate its strength and weaknesses. Extra points for implementing the algorithm used. Papers can be found at Google Scholar.