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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **Ph. D Course Work End Term Examinations – JAN-FEB 2025** |
| **Date:** 04 – 02- 2025 **Time:** 09:30 am – 12:30 pm |

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| **School:** SOE | **Program:** Ph. D | |
| **Course Code :**ECE848 | **Course Name :** Application of python To Image Processing | |
| **Semester**: | **Max Marks**:100 | **Weightage**:50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **20** | **20** | **60** |  |  |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

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| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 10 marks. 6Q x 10M=60Marks** | | | | |
| **1** | There are two images information of which are stored in two registers X and Y. Both the image information are in .CSV format. A researcher wants to know the relation between two data (=,>,<).How will you do the above operation using python. | **10Marks** | **L2** | **CO1** |
| **2** | What do you mean by image classification and segmentation? Bring out the importance of binary classification in image processing as applied for satellite image | **10Marks** | **L2** | **CO1** |
| **3** | You are having an array of 10 datas which are the output of 10 sensors deployed in the field to collect the ground truth. You want to normalize them to feed as input to a deep neural network. Write a python program for the above situation. | **10Marks** | **L3** | **CO2** |
| **4** | During image classification, selection of threshold is very important. Before the classification was done on the basis of NDWI values >0 and <0. At present, auto thresholding plays an important role. Discuss the importance of auto thresholding taking any one of the methods | **10Marks** | **L3** | **CO2** |
| **5** | Google earth engine is a very important source of information for getting satellite data. A researcher wants to register for the same. Help him/her in registering and advantages and disadvantages of same. | **10marks** | **L4** | **CO3** |
| **6** | There are many methods of image segmentation in MATLAB and PYTHON. Suggest a researcher the best method to segment a satellite image for classification | **10Marks** | **L4** | **CO3** |

**Part B**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer the Questions. Each question carries 20 marks 2Q x 20 = 40 Marks** | | | | | |
| **7.** |  | There are many modules available in python. Which are the modules suitable for satellite image processing. Which method is best suited for satellite image classification using auto thresholding. | **20 Marks** | **L4** | **CO3** |
|  | | | | | |
| **8.** |  | Image fusion is a process of adding two images of the same target taken at different angles. A researcher is having two images stored at two different locations and he wants to create a fused image of the two. Help him/her in getting the required data using python. | **20 Marks** | **L4** | **CO3** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***