

Code No: 155EH**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, January/February - 2023****COMPUTER VISION AND ROBOTICS****(Computer Science and Engineering – Artificial Intelligence and Machine Learning)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) Write the short note on CAMERAS. [2]
- b) What is Radiometry? [3]
- c) What is Texture? [2]
- d) How do you extract Shape from Texture? [3]
- e) What do you mean by segmentation? [2]
- f) What is Stereopsis? [3]
- g) What is a linear dynamic model? [2]
- h) Discuss Probabilistic Methods for segmentation. [3]
- i) Write the Least-Squares Parameter Estimation. [2]
- j) Comment on Analytical Photogrammetry. [3]

PART – B**(50 Marks)**

- 2.a) Illustrate the Pinhole Cameras with example.
 - b) Identify the Important Special Cases in Measuring Light by taking a use case of your choice. [5+5]
- OR**
- 3.a) Illustrate the Photometric Stereo application.
 - b) Use the Global Shading Models for Interreflections. [5+5]
- 4.a) Inspect the process of Estimating Derivatives with Noise.
 - b) Examine the Sampling and Aliasing methods. [5+5]
- OR**
- 5.a) How do you Represent the Texture. Give a example.
 - b) Examine the Spatial Frequency and Fourier Transforms in applying the linear filters. [5+5]
- 6.a) Illustrate the Binocular Fusion in Stereopsis.
 - b) Explain segmentation by graph theoretic clustering. [5+5]
- OR**
- 7.a) Illustrate the process of Reconstruction Using More Cameras.
 - b) Make use of Clustering Pixels for Image Segmentation. [5+5]

8. Examine the following Segmentation by Fitting a Model

- a) Fitting Lines
- b) Fitting Curves.

[5+5]

OR

9.a) Explain the Linear Dynamic Models for tracking.

- b) How do you handle the Missing Data Problems in probabilistic methods?

[5+5]

10.a) Illustrate the use case of Registration in Medical Imaging Systems.

- b) Identify the Camera Parameters and the make use of Perspective Projection.

[5+5]

OR

11.a) Identify a method for Obtaining the Hypotheses Using Invariants.

- b) Make use of Affine Cameras and Affine Projection Equations for geometric camera models.

[5+5]

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Used papers 2023