IMPORTANT QUESTIONS UNITWISE

UNIT 1

1. Write short notes on the following two dimensional Geometric Primitives: **a.** 2D Points (2) and **b.** 2D Lines (2)

2. Explain the basic set of two dimensional planar transformations with a neat figure.(6)

3. Explain the general image processing operator in detail. (6)

4. Explain briefly about Geometric primitives and transformations with neat diagram.(10)

5. Define the following: **a.** Composting (2) and **b.** Matting (2)

6. What is Bidirectional Reflectance Distribution Function (BRDF)? (4)

7. With neat figure, discuss the components into which a typical BRDF is split into(6).

8. What Is Fourier Transform? Discuss about the closed form equations of Fourier Transform in continuous and discrete domains. (6)

9. Differentiate between Discrete- and Fast- Fourier Transforms. (4)

10. Illustrate the following Linear Filtering techniques,(10)
- ☐ Separable filtering
- ☐ Band-pass and steerable filters

Unit 2

1. With a neat diagram, illustrate the Aperture Problem for different image patches. (10)

2. Describe the discrete cosine transform in Fourier transform.(4)

3. Give the equation for the following and briefly summarize each in few words:

a. True Positive Rate (TPR) and False Positive Rate (FPR) (4) and **b.** Positive Predictive Value (PPV) and Accuracy (ACC) (6)

4. Explain the various techniques in Edge Detection with necessary examples. (10)

5. What is Hough Transform? With a neat figure, explain how a 2D line equation is expressed In terms of the normal and distance to the origin. (10)

6. Explain briefly about Orthography and para-perspective in 2D and 3D geometric primitives.(10)

Unit 3

11. Explain Snakes in detail. What is the main drawback in using Snakes? (6)

12. What is the basic solution to overcome the drawback while using Snakes? (4)

13. Explain Normalized Cuts in detail with an example. (10)

14. Explain the following systems with necessary examples: **a.** Scissors (5) **b.** Level Sets (5)

15. Categorize the various techniques developed for solving Pose Estimation problem. (10)

16. Explain in detail about feature detection techniques with relevant examples and diagrams.(10)

17. Illustrate the expectation maximization algorithm in K-means and mixture of Gaussians..(10)

18. Illustrate Graph cuts and energy-based methods with neat diagram. (10)

Unit 4

16. What is the need for Projective Reconstruction? (5)

17. Briefly discuss why does the Essential Matrix (E) change into the Fundamental Matrix (F)? (5)

18. Explain Hierarchical Motion Estimation in detail. (10)

19. Examine the various Bundle Adjustment techniques involved in accurately recovering structure and motion. (10)

20. Explain Fourier-based Alignment in detail with necessary examples. (10)

Unit 5

21. What are two-dimensional motion models? Explain how they can be used for image stitching. (10)

22. Explain the basic steps involved in choosing a composting surface. (10)

23. With neat figures, explain the Projection from: **a.** 3D to Cylindrical coordinate (5) and **b.** 3D to Spherical coordinates (5)

24. Explain the process of Recognizing Panoramas. (5)

25. What are the various difficulties faced while Recognizing Panoramas? (5)

**for 4TH UNIT AND 5TH UNIT STUDY CLA-3 QUESTION PAPER BOTH THE SETS