USN ☐☐☐☐☐☐☐☐☐☐

18AI742

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Computer Vision

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   Explain Nonlinear approach to camera calibration.   (10 Marks)
    b.   Explain Chromatic aberration and Vignetting with a neat diagram.   (10 Marks)

OR

2   a.   With a neat diagram explaining the Image sensing pipeline and its important effects.   (10 Marks)
    b.   What are Orthography and perspective? Explain.   (10 Marks)

Module-2

3   a.   Explain Continuous convolution with respect to one dimension and two dimensions.   (10 Marks)
    b.   Explain Gradient-Based Edge Detectors with an algorithm.   (10 Marks)

OR

4   a.   What is Aliasing? Explain.   (10 Marks)
    b.   Explain K-means Clustering for Vector Quantization in detail.   (10 Marks)

Module-3

5   a.   Briefly explain human stereopsis with a neat diagram.   (10 Marks)
    b.   Explain Affine structure and Motion from multiple images.   (10 Marks)

OR

6   a.   Explain Natural ambiguity of the problem and Euclidean structure and Motion from multiple images.   (10 Marks)
    b.   Explain the global methods for binocular fusion.   (10 Marks)

Module-4

7   a.   Describe Agglomerative Clustering with a graph.   (10 Marks)
    b.   Explain the concept of tracking detection and tracking matching in detail.   (10 Marks)

OR

8   a.   Write a short note on M-Estimators, EM algorithm for mixture models.   (10 Marks)
    b.   In model selection, which model is the best fit?   (10 Marks)

Module-5

9   a.   Briefly explain the concept of registration in Medical Imaging systems.   (10 Marks)
    b.   Explain sliding window method with respect to detecting objects in images with an algorithm.   (10 Marks)

OR

10 a.   Write a note on Pedestrian detection.   (10 Marks)
    b.   Explain the concept of Video understanding in detail.   (10 Marks)

* * * * *