CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
IV–B.TECH–II–Semester End Examinations (Advanced Supply) – June - 2025
COMPUTER VISION
(CSE)

[Time: 3 Hours]　　　　　　　　　　　　　　　　　　　　　**[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
　　　　Part A is compulsory which carries 20 marks. Answer all questions in Part A.
　　　　Part B consists of 5 Units. Answer any one full question from each unit. Each question
　　　　carries 10 marks and may have a, b, c as sub questions.

PART-A　　　　　　　　　　　　　　　　　　　　　　　　(20 Marks)

1. a) Define edge detection.　　　　　　　　　　　　　　　　　　　　　　　[2M]
　 b) What is the role of image thresholding in object segmentation?　　　　　[2M]
　 c) What is the purpose of skeletonization in shape analysis?　　　　　　　[2M]
　 d) Explain how chain codes represent object boundaries.　　　　　　　　　[2M]
　 e) Define the foot-of-normal method in line detection.　　　　　　　　　　[2M]
　 f) Explain one real-world application of Hough Transform.　　　　　　　　[2M]
　 g) What is the significance of projection schemes in 3D vision?　　　　　　[2M]
　 h) What is the purpose of optical flow in motion detection?　　　　　　　　[2M]
　 i) What is Eigenfaces in face recognition?　　　　　　　　　　　　　　　[2M]
　 j) What is foreground-background separation in surveillance?　　　　　　　[2M]

PART-B　　　　　　　　　　　　　　　　　　　　　　　　(50 Marks)

2.　Explain the various classical filtering operations used in image processing.　[10M]
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3.　Discuss how corner and interest point detection methods contribute to image analysis?　[10M]

4.　Discuss the concept of connectedness and its role in object labeling and counting.　[10M]
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5.　Differentiate between region descriptors and boundary descriptors.　[10M]

6.　Explain the working principle of the Hough Transform for line detection.　[10M]
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7.　Illustrate how Hough Transform is used in ellipse detection with an example.　[10M]

8.　Discuss how shape-from-shading and shape-from-texture methods work in 3D reconstruction.　[10M]
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9.　Illustrate the working of bundle adjustment in 3D vision.　[10M]

10.　Explain the significance of Eigenfaces in face recognition.　[10M]
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11.　Evaluate the effectiveness of human gait analysis in biometric authentication.　[10M]

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