

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VII EXAMINATION – SUMMER 2026

Subject Code:3171614

Date:08-06-2026

Subject Name: Computer Vision

Time: 02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Explain following terms in short: **03**
1) Rigid Transformation 2) Image Digitization 3) Image Radiometry
- (b) Differentiate Image Processing and computer vision. **04**
- (c) Explain computer vision with its real-life applications. **07**
- Q.2** (a) Explain Filtering. Discuss any one type of filter. **03**
- (b) What is histogram? Explain in detail. **04**
- (c) Explain convolution with numerical example. (Take any 3X3 Image and 3X3 kernel) **07**
- OR**
- (c) What does Image geometry describe? Explain various geometric primitives. **07**
- Q.3** (a) Write and explain any three python libraries used in computer vision practical implementation. **03**
- (b) Write short note on HOG. **04**
- (c) Explain edge detection with its various methods. **07**
- OR**
- Q.3** (a) What is the difference between Erosion and Dilation method? **03**
- (b) Write short note on SIFT. **04**
- (c) Explain corner detection technique with an example. **07**
- Q.4** (a) Draw the working methodology of pinhole camera and describe it in short. **03**
- (b) Explain split and merge algorithm with an example. **04**
- (c) What do you understand by morphological operation? Explain various functions of morphological operation with an example. **07**
- OR**
- Q.4** (a) What is segmentation? List its various applications. **03**
- (b) Explain watershed algorithm with an example. **04**
- (c) What is active contours? Explain any four active contour models. **07**
- Q.5** (a) What do you understand by object tracking? List out its various application. **03**
- (b) What is the importance of statistical filtering? Why it is used? **04**
- (c) Enlist various motion representation techniques. Explain any one in detail. **07**
- OR**
- Q.5** (a) What do you understand by object recognition? List out its various application. **03**
- (b) Explain the concept of motion parallax. **04**
- (c) Write short note on Kalman filter. **07**
