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Question Paper Code : 53683

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Sixth Semester

Robotics and Automation Engineering

RO 6601 — VISION SYSTEMS AND IMAGE PROCESSING

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Brief pinhole camera.
2. Distinguish computer interface and camera interface.
3. Define image smoothing.
4. State segmentation of contours.
5. What is object with sharp edges?
6. Mention use of depth buffering.
7. Define transformation sensor reading.
8. Brief K-means clustering.
9. State real robots.
10. Define open NI.

PART B — (5 × 13 = 65 marks)

11. (a) List and explain the elements of visual perception.

Or

(b) Explain Gaussian optics with neat sketch.

12. (a) Explain the Sub-pixel precise contours with applications.

Or

(b) (i) Explain in detail, how to calibrate the camera.

(ii) Draw and explain the stereo Reconstruction with example.

13. (a) List and explain the components of object Recognition.

Or

(b) Explain the following : (7 + 6)

(i) Object recognition using two views.

(ii) Recognition using a three view.

14. (a) Draw and explain the construction of two target laser alignment.

Or

(b) Explain Landmark spatiograms.

15. (a) Explain in detail the Robotic operating system with neat sketch.

Or

(b) Draw the architecture of PLC and explain each blocks.

PART C — (1 × 15 = 15 marks)

16. (a) Explain the various steps of image processing and how to analysed the image with one example.

Or

(b) Discuss the case study of image processing used in robot vision.
