

2107073

MASTER OF VOCATION
Robotics and Automation
Subject: Machine Vision Systems
Subject Code: CSE-902
Semester: Third
July 2021
Theory (External): 70 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number									

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x2=20 Marks)

- A. Define Lenses.
- B. What are the basic components of Vision system?
- C. What is object recognition?
- D. Write any two advantages of image enhancement.
- E. What do you mean by camera calibration?
- F. Explain two main application of mapping sonar data.
- G. What is video tracking?
- H. Explain simulated robots.
- I. What is thresholding?
- J. Explain the term sensor and transducer.

SECTION –B (ESSAY TYPE QUESTIONS)
(5x10=50 Marks)

1. Explain the process of installing and testing ROS camera drivers.
2. Write short note on:
 - (a) Open CV
 - (b) Simulated Robots
3. Differentiate the Iconic Image Processing and Multiscale Image Processing.
4. Explain the concept of lightening and illumination with schematic diagram.
5. Describe the purpose of image segmentation. What do you mean by segmentation of contours?
6. Explain the following terms:
 - (a) Mapping Sonar Data
 - (b) Video Tracking
7. What are the methods of gray value transformation used in image enhancement? Explain the technique used.
8. What do you mean by object recognition? Compare Classical pattern recognition and neural net approach considering the object models used by both of these approaches.