

2101278

MASTER OF VOCATION
Robotics and Automation
Subject: Sensors Applications in Robotics
Subject Code: ECE-902
Semester: Third
January 2021
Theory (External): 35 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 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 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)
(10x1=10 Marks)

- A. What are advantages of microwave sensors? 1
- B. Mention the types of laser sensors? 2
- C. What is RFID? Explain briefly.
- D. What is reflex detection?
- E. What are different techniques used for image transformations?
- F. What are optical encoders?
- G. Define sensors and transducers?
- H. What are different sensing principles? Explain in brief.
- I. How the sensors are helpful in process manufacturing plants?
- J. What are areas of application of image processing in the field of robots? Name any two algorithms for image enhancement application.

SECTION – B (ESSAY TYPE QUESTIONS)

(5×5 = 25 Marks)

1. Explain in detail the working principle of Proximity sensors?
2. What is ADC? Explain its working in detail.
3. How the RFID technique is used in robots to localize and track the objects?
4. What are difference between ultrasonic sensors and microwave sensors? Explain the ultrasonic sensors.
5. What are different types of colour sensors? Write colour sensing algorithm and explain it in detail.
6. How the partially visible objects can be detected by robots using sensor? Explain.
7. What is signal processing and signal conditioning? What are the uses of these techniques in sensing applications?
8. Write a short note on following
 - a) Semiconductor absorption sensors
 - b) Fuzzy logic for opt-electronic colour sensing in manufacturing

==END OF PAPER==