

MASTER OF VOCATION
Robotics and Automation
Subject: Advance Robotics
Subject Code: RA-901
Semester: Fourth
July 2022
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

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SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. What is an example of an open loop system?
- B. What is the function of actuator?
- C. How does the velocity sensor work?
- D. What is tactile sensor?
- E. How information is sent from the robot sensors to robot controllers?
- F. What is the full form of VAL?
- G. Which language is used to control ABB industrial robot?
- H. Which type of robot configuration is suitable for pick and place operations?
- I. Write the meaning of the following command D MOVE (1,10),
D MOVE(<4,5,6>,<30, -45,90>)
- J. List few safety precautions necessary for robotic application.

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. What are various types of sensors used in robotics?
2. Explain different types of robot applications?
3. Discover the type of industrial manipulators used in inspection?
4. If an object is in front of sensor, then part of emitted light is reflected on consequently the value of returned is logic 1. Otherwise it returns 0. The opening or closing of the robot hand can be programmed in an incremental way. Write a program in VAL II language to perform the following: center the robot hand on the object:-moves right or left(if SR=1 or SL=1, resp.) until both sensors returns 0. Then close the grippers by Δd until either SR=1 or SL=1. If both sensors generate 1 then exist.
5. Define a robot and explain briefly the advantages and disadvantages of using robots in industries.
6. With neat sketch explain Proximity and range sensors used in robots.
7. Explain 'WAIT','DELAY','SIGNAL','DEPART' commands with suitable example.
8. Explain the application of robot in processing and inspection.

END OF PAPER