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Anna University Exams April/May 2015 – Regulation 2008
Rejinpaul.com Unique Important Questions – 8th Semester BE/BTECH
EE2023 Robotics and Automation

Unit 1

1. State the Asimov's laws of robotics and how do you specify a robot.
2. Explain the terms Resolution, Accuracy, Repeatability, Pay load and Work Volume of an industrial robot.
3. Explain with neat sketches five important robot configurations.
4. Compare the various attributes of robot with those of human being. Explain a robot structure with a sketch.
5. What are the various types of joints used in robots? Sketch the following robots indicating the joints and degree of freedom. (i) SCARA robot. (ii) Gantry robot.
6. What is a robot? Describe the function of the basic components of a robot. Discuss the differences between servo controlled and non-servo controlled robots. Sketch and explain the servo control system for point to point positioning.

Unit 2

1. Explain the principle of working of the various types of sensors used in robots.
2. What is Machine vision? Explain the techniques of image processing.
3. What are the types of hydraulic actuators used in robotics? Explain their characteristics? Explain with a neat sketch principle of working of a harmonic drive.
4. What is robot vision? Describe a vision sensor used to take the image of an object.

Unit 3

1. What is the function of a manipulator? Sketch and explain a robotic manipulator arm. Compare mechanical grippers with other types of grippers used in robots
2. Explain the variable structure systems for the control of manipulators.
3. How is a robot end- effector specified? Discuss the design consideration of the arm tooling.
4. Explain the principle of adhesive grippers. Write down a table depicting a checklist of factors in the selection and design of grippers.

Unit 4

1. What are the various inputs to an inverse kinematics algorithm? Explain the characteristics of the solution of the inverse kinematic problem.
2. Classify various teaching methods of robot and explain briefly each of them.
3. What is a Jacobian work envelope? Explain in brief.
4. What are the advantages and disadvantages of off-line programming? Name four of the well known off-line programming systems.

Unit 5

1. Explain the non-manufacturing areas of application of industrial robots.
2. What is a robot cell? Discuss the popular robotic cell layouts. Explain its design considerations
3. What are the various applications of robots in hazardous areas? Discuss them in detail.
4. Explain briefly about robot spray coating and welding robot.
5. Discuss economic analysis as applied to industrial robots. Write short notes on selection on robots.

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