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GUJARAT TECHNOLOGICAL UNIVERSITY ME - SEMESTER- II (Old course) • REMEDIAL EXAMINATION - SUMMER 2015 Subject Code: 1720803 Date: 14/05/2015 Subject Name: Robotic Engineering Time: 02:30 pm to 5:00 pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** (a) What is robotics? Write the advantages and disadvantages of robots. 07 (b) Define the term oWork volumeo for robot. Sketch the work volume of 07 cylindrical and Cartesian robot anatomies. 0.2 **07** What are the different forms of transformation? Explain any one with sketch. (a) Sketch any three types of joints and indicate the degree of freedom as well as 07 write type of possible motion by them. OR **(b)** Explain in detail õD-H representation of forward kinematicsö with algorithm. 07 **Q.3** (a) What is closed loop form of solution to inverse kinematic problem? Explain 07 method of obtaining closed form solution. (b) What do you mean by Robot vision? Describe about the analog to digital **07** conversion. OR Q.3 **07** (a) Define and explain the terms: Accuracy, repeatability, compliance (b) Explain different ways of lead through programming methods and gives its 07 limitations. Write the short note on textual robot language. 07 **Q.4** (a) **(b)** Explain steeper motor control system. 07 OR (a) Enlist the factors considered for the selection and design of grippers. **Q.4** 07 **(b)** List the different types of sensors and explain any one of them. 07 (a) Discuss the issues that must be considering in the design of the robot work cell. **07** Q.5 **(b)** List the applications of robots in processing operations. 07

(a) Write short note on :Inline robot cell design

(b) Write the short note on multi-axis robots

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