GUJARAT TECHNOLOGICAL UNIVERSITY

M.E -IIst SEMESTER-EXAMINATION - JULY- 2012

Subject code: 1720803 Date: 10/07/2012

Subject Name: Robotic Engineering

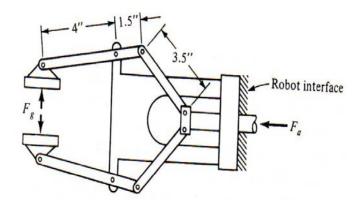
Time: 10:30 am – 13:00 pm Total Marks: 70

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Define Robot. Compare hard automation and soft automation.
 (b) List the specification of robots and explain in brief.
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- Q.2 (a) Explain with figure the robot configuration. 07
 - (b) Explain the various types of gripper mechanism with neat sketch. 07

OR

- (b) Explain: 'Roll, Pitch and Yaw' angle of configuration. 07
- Q.3 (a) The diagram shows that the linkage mechanism and dimensions of a gripper used to handle a work part for a machining operation. Suppose it has been determined that the gripper force is to be 25 lb. What is required to compute the actuating force to deliver this force of 25 lb.



(b) Explain with example "Forward and Inverse kinematic". 07

OR

- Q.3 (a) Explain the Euler angle representation. 07
 - (b) Explain different types of joints in robots. 07
- Q.4 (a) Explain "Stepper motor" in control system.

(b) Enlist various Sensors. Explain with neat sketch Hall-effect sensors.

- Q.4 (a) Enlist the robot languages-features and application.
- Q.4 (b) Explain with neat sketch "Charged Coupled Device (CCD) in Machine 07 Vision System.
- Q.5 (a) Write a short note on: In-Line Robot Cell design.
 - (b) Explain the different way of Lead through programming methods and also 07 gives its limitations.

OR

- Q.5 (a) Explain general consideration about application of robot in material 07 handling.
 - (b) Write a short note on Recent Trends in Robotics. 07

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