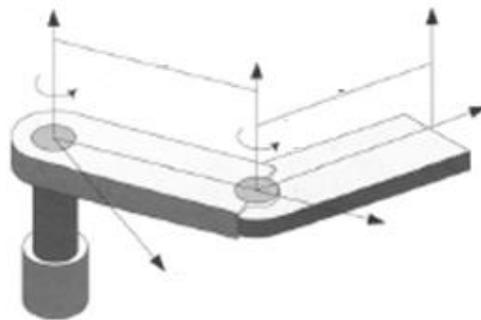


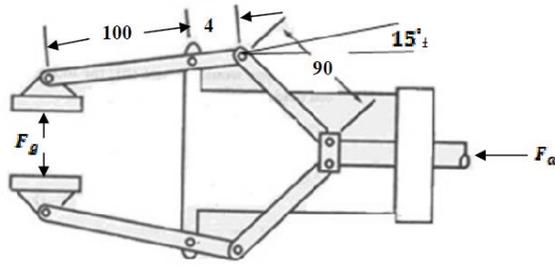
GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014****Subject code: 1720803****Date: 04-12-2014****Subject Name: Robotic Engineering****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is the difference between inverse kinematics and forward kinematics **07**
 (b) Explain any three position sensors in details **07**
 A) Accuracy D) Pay Load
 B) Repeatability E) Reach
- Q.2** (a) What are the different Mode for Programming Robot **07**
 (b) What is Degree of freedom in terms of robot. **07**
- OR**
- (b) Explain Robot Drive Non Servo and Servo robot in details **07**
- Q.3** (a) Draw configuration diagram frame diagram for following A 2R manipulator, **07**
 acting in a horizontal plane.(Can assume axis name)



- (b) Explain the different types of sensors in details. **07**
- OR**
- Q.3** (a) Draw a block diagram of typical robotic vision system. Explain image processing in brief and specify complex tasks that can be performed by a good vision system. **07**
 (b) What is compliance? Give detail idea about Remote Center Compliance device. **07**
- Q.4** (a) Enlist gripper design considerations in terms of part and performance specifications. **07**
 (b) Figure shows the linkage mechanism and dimensions of a gripper used to handle a work part for machining operation. The gripper force is determined to be 150N. Determine the actuating force F_a applied to the plunger.(Assume Suitable data) **07**



OR

- Q.4** (a) Write short note on Robot intelligence. **07**
 (b) Explain Remote Centered Compliance (RCC) device for assembly operation. **07**
- Q.5** (a) Describe robot application. **07**
 (b) Explain in detail Robot centered cell with its layout. **07**

OR

- Q.5** (a) Define Trajectory planning. **07**
 (b) Explain the use of robot in Material Handling. **07**
