Total No. of Questions : 8] *[Total No. of Printed Pages : 1*

Roll No .....

MEIC-302(A)

M.E./M.Tech., III Semester Examination, June 2020

Robotics

(Elective-II)

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Explain composite rotation with suitable example.
   b) Define the arm equation of a robotic manipulator.

2. a) Explain about two axis planar mechanisms for the inverse kinematic problem.
   b) Discuss briefly the necessity of interpolators.

3. How is Robotics regulated? Explain the difference between computed torque control and variable structure control.

4. a) Explain about Recursive Newton-Euler formulation.
   b) What is Dynamic model of a one axis robot?

5. What do you mean by Inverse Kinematics problem? How to solve the Inverse Kinematics problem?

6. a) Explain different techniques used for image segmentation.
   b) Explain perspective transformation.

7. a) Explain Generalized Voronoi Diagram (GVD) for a gross motion planning.
   b) Write about compliant motion and guarded motion in a fine motion planning.

8. Explain the following terms:
   a) Induced Joint torques and forces.
   b) PID control of single axis.
   c) Iterative processing of Robot vision.
   d) Simulation of Planar Motion.

******