Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MEIC-302(A)

M.E./M.Tech., III Semester

Examination, December 2020

Robotics

(Elective-II)

Time : Three Hours

Maximum Marks : 70

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

1. a) Write and explain the basic concepts of robotics.
   b) Define induced joint torques and forces for robotics.

2. a) Explain a dynamic model of a two axis and three axis.
   b) Describe Lagrange-Euler dynamic model.

3. a) What are state equations for robotic controlling?
   b) Explain linear feedback systems.

4. a) Discuss the perspective transformation structured illumination.
   b) How is impedance control implemented in robotics?

5. a) How is task level programming done?
   b) Explain the simulation of planar motion?

6. a) Describe the kinetic analysis and coordinate transformation.
   b) Explain the generalized force acting on the robot.

7. a) Discuss the PD-Gravity control.
   b) Explain the work space analysis and trajectory planning.

8. Define the following:
   a) Joint space singularities
   b) Inverted pendulum
   c) Iterative method
   d) Gross motion planning

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