



10MA74

Seventh Semester B.E. Degree Examination, June/July 2019
Industrial Robotics

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Describe the relationship between Automation and Robotics. (09 Marks)
b. List the advantages and disadvantages of using robots in industries. (06 Marks)
c. Write a brief note on future applications of robots. (05 Marks)
- 2 a. With neat sketches, explain the geometrical configuration of robotic system. (08 Marks)
b. Explain the types of Robotic drive systems. (06 Marks)
c. Explain:
i) ACCURACY
ii) REPEATABILITY
iii) RESOLUTION. (06 Marks)
- 3 a. Explain the transformation and block diagram of spring mass system. (08 Marks)
b. Define controller. List the types. (04 Marks)
c. Explain transient response to second order system. (08 Marks)
- 4 a. Explain Direct and Inverse Kinematics. (08 Marks)
b. How are Euler angles represented? (04 Marks)
c. Explain D-H representation. (08 Marks)

PART – B

- 5 a. Explain La Grange Euler formulations. (10 Marks)
b. Obtain the motion equations of robot manipulator. (10 Marks)
- 6 a. What are the general considerations on trajectory planning? (10 Marks)
b. With an example, explain 4 – 3 – 4 trajectory planning. (10 Marks)
- 7 a. Write short notes on :
i) Manual and lead through teaching
ii) Programming with graphics
iii) Storing and operating. (12 Marks)
b. Explain the types of programming languages. (08 Marks)
- 8 Explain :
a. PROXIMITY SENSING
b. RANGE SENSING
c. SENSING AND DIGITIZING
d. SAMPLING AND QUALNTITIZATION. (20 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.