

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Robotics for Industry

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define the following :
(i) Robotics
(ii) Degrees of freedom
(iii) Industrial Robot
(iv) Work volume of Robot. (04 Marks)
- b. Explain Robot Anatomy with a neat diagram. (06 Marks)
- c. Define Industrial Automation. Describe different types of Industrial Automation. (10 Marks)

OR

- 2 a. Describe brief history of Robotics. (10 Marks)
- b. Explain advantages, limitations and applications of Robots in industries. (10 Marks)

Module-2

- 3 a. Describe working of hydraulic drive system with the help of a block diagram. (10 Marks)
- b. Differentiate Hydraulic, Pneumatic and Electric drive systems used in Industrial Robots. (10 Marks)

OR

- 4 a. Describe the working principle of light based range sensor. (08 Marks)
- b. With a neat diagram, explain the working principle of tactile sensor. (08 Marks)
- c. Differentiate transducers and sensors. (04 Marks)

Module-3

- 5 a. Explain different considerations in gripper selection and design. (10 Marks)
- b. Describe the classifications of grippers used in Industrial Robots. (10 Marks)

OR

- 6 a. Describe different components used in pneumatic force control circuits. (10 Marks)
- b. Write a short note on different tools used in Industrial Robots as end effectors. (10 Marks)

Module-4

- 7 a. Classify different methods of Robot programming. (10 Marks)
- b. Explain capabilities and limitations of lead through methods of robot programming. (10 Marks)

OR

- 8 a. Write a short note on wait, signal and delay commands used in Robot programming. (10 Marks)
- b. Explain the concept of motion interpolation in Robot programming. (10 Marks)

Module-5

- 9 a. Describe different controllers equipped in Automated systems. (10 Marks)
b. Write a short note on safety in Industrial Automation. (10 Marks)

OR

- 10 a. Explain ten principles of Robot material handling process. (10 Marks)
b. Describe Automatic processing operations using Robots. (10 Marks)

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