

24/11/2017 AN



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Question Paper Code : 50412

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Sixth/Eighth Semester
Electronics and Communication Engineering
EC 6003 – ROBOTICS AND AUTOMATION
(Common to Medical Electronics)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. State three laws of robotics.
2. Define the terms accuracy and precision of a robot.
3. Suggest a suitable robotic drive for heavy load application.
4. Write short notes on tactile sensors.
5. Define the term work-volume of a robot.
6. Differentiate between active and passive grippers.
7. What are the methods of robot programming ?
8. Define degree of freedom.
9. What are the benefits of robots in manufacturing applications ?
10. What are the design parameters to be kept in mind while designing a robot for underwater application ?

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PART – B

(5×16=80 Marks)

11. a) Explain the different types of configurations of industrial robots with neat diagram.

(OR)

- b) Describe the dynamic stabilization of 3 arm robot with neat sketch.

12. a) Explain the various types of drives and sensors used in robotic system.

(OR)

- b) With neat diagram, explain the functions of various elements of a robotic vision system. Also list the parameters for selection of vision system.

13. a) Develop an electro pneumatic manipulator control circuit using programmable logic controller.

(OR)

- b) Explain the factors to be considered for the selection and design of grippers. Explain the same with an example.

14. a) Derive the expression for the forward and reverse transformation of 2-degree of freedom arm.

(OR)

- b) Brief about Robot programming languages and also explain teach pendant for robotic system.

15. a) Explain the robotic painting cells in automobile industries. Also write the reasons and specifications of a robot for spray painting application.

(OR)

- b) Explain the complete process of selection of a robot for spot welding application. Also explain the necessary precautions that must be addressed while using this robot in a shop-floor along with other automated machines.
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