Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ECE) (2012 to 2017 E-III (Sem.–7)

ROBOTICS

Subject Code : BTEC-917

M.Code : 71922

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. What is Automation in robotics?
2. Differentiate between joint coordinates and world coordinates.
3. Describe the principle of pneumatic position sensors.
4. How dc servo motors differ from ac servo motors?
5. What are degrees of freedom?
6. Define Payload of a Robot.
7. Differentiate between internal and external grippers.
8. How time of flight camera works?
9. List the advantages and disadvantages of pneumatic actuator.
10. What is inverse kinematics?

SECTION-B

11. What are the basic components of Robot? Explain them briefly with sketch.

12. Explain about Proximity sensors and Compliance sensors.

13. Discuss about Vaccum Grippers along with their advantages and disadvantages.

14. Explain about different image processing techniques used in Robotics.

15. Discuss the textual robot language structure with the help of block diagram.

SECTION-C

16. Discuss how the image segmentation helps to improve the quality of an image in a machine vision system?

17. Explain the various drive system used with an industrial robot and compare their features, merits and demerits.

18. Determine the manipulator Jacobian matrix and singularities for the 3-DOF articulated arm.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.