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Total No. of Pages : 02

Total No. of Questions : 09

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

ROBOTICS

Subject Code : BTEC-917

M.Code : 71922

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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**1. Answer briefly :**

- a) What do you mean by robot anatomy?
- b) Write the joint notation for Spherical Robot and Articulated Robot.
- c) What do you mean by time of flight in laser rangefinder?
- d) What are encoders? How do they differ from resolvers?
- e) What are grippers? Name the types of gripper.
- f) Compare hydraulic and pneumatic robot drive systems.
- g) What do you mean by data reduction in machine vision?
- h) What is segmentation in machine vision?
- i) What do you mean by forward kinematics?
- j) What is robot programming? What are the types of robot programming?

SECTION-B

2. With the help of suitable diagrams explain the classification of robots on the basis of coordinate systems.
3. Explain the working of two and three fingered grippers with suitable diagrams.
4. Explain in detail the image processing and analysis technique in machine vision.
5. Discuss about direct and inverse kinematics.
6. Explain the VAL robot programming in detail.

SECTION-C

7. Explain the operational principles, working and applications of servo motors.
8.
 - a) Explain the lighting techniques used in machine vision.
 - b) Write the applications of machine vision with examples.
9. Explain the Denavit-Hartenberg (D-H) representation for kinematic description of robotic manipulator.

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.