Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (2011 Batch E-III)/(ETE) (2011 Onwards E-III) (Sem.–7,8)

ROBOTICS

Subject Code : BTEC-917

Paper ID : [A3012]

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) Define work volume of a robotic arm.

b) Differentiate between accuracy and repeatability of a robot.

c) What is Hall effect?

d) What is proximity sensor?

e) Differentiate between a gripper and a tool.

f) Define pay load capacity of a robot.

g) Discuss the applications of machine vision in robots.

h) What is the purpose of forward kinematics?

i) What is teach pendant programming?

j) Differentiate between binary and analog sensors.

SECTION-B

2. With a neat line diagrams, discuss the different physical configuration of robots.

3. Discuss in detail the working of optical encoder.

4. Explain the different components and working of a hydraulic drive system used in robots.

5. What is image processing? Briefly explain various techniques used for image processing.

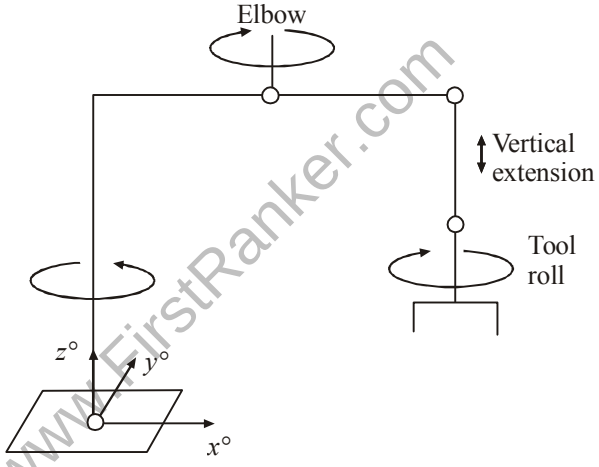
6. Write short note on VAL programming.

SECTION-C

7. For the four degree-of-freedom robot shown in figure below, determine :

   a) The D-H Kinematics Parameters.

   b) The Arm Equation.



8. Discuss the basic working principle and characteristics of stepper and DC motor used in robots.

9. Explain the following :

   a) Edge detection algorithm.

   b) Two fingered and three fingered grippers.