

MASTER OF TECHNOLOGY (MECHANICAL CAD/CAM) (CBCS - 2015 COURSE)

M. Tech. (Mechanical CAD/CAM) Sem-IV :SUMMER- 2022

SUBJECT : SELF-STUDY PAPER-II:ROBOTICS & SENSORS

Day : Wednesday

Time : 10:00 AM-01:00 PM

Date : 15-06-2022

S-14578-2022

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Both the sections should be written in **SEPARATE** answer book.
- 3) Figures to the **RIGHT** indicate full marks.

SECTION – I

Q.1 Discuss how industrial robots are useful in industries. **(10)**

OR

Describe various parameters used for assessment robot performance?

Q.2 Describe the effect of actuation schemes on the kinematic performance of robot with suitable example. **(10)**

OR

Explain briefly various drive methods used for robot gripper systems.

Q.3 What are the fundamentals of image processing for robotics applications? **(10)**

OR

What are the different types of vision sensor used in robotics? Explain any one.

SECTION - II

Q.4 State the four parameters involved in Denavit -Hartenberg method. Also give the advantages of Denavit – Hartenberg method. **(10)**

OR

What is D-H representation? Discuss D-H algorithm.

Q.5 Explain how machine vision system works to inspect the parts? **(10)**

OR

Write any one algorithm for edge detection and segmentation of an image. Describe the industrial applications of image processing in the field of mechanical engineering.

Q.6 State various robot language. Discuss any two of them in brief. **(10)**

OR

Explain the terms as follows:

- i) Continuous Path
- ii) Circular interpolation
- iii) Joint interpolation

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