

Total No. of Questions : 4]

SEAT No. :

PD197

[Total No. of Pages : 2

[6410]-523

T.E. (Robotics and Automation)
ROBOT PROGRAMMING
(2019 Pattern) (Semester - II) (311508A) (Insem)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Neat diagrams and flowcharts/algorithms must be drawn wherever necessary.
- 2) Figures to the right indicate full marks.
- 3) Use of calculator is allowed.
- 4) Assume suitable data, if necessary.

Q1) a) Draw and explain the block diagram of robot control system and explain the significance of actuators in robot control system. [8]

b) Write a short note on 'Motion commands'. [7]

OR

Q2) a) What is the significance of sensors in robotic arm? Write a short note on 'Sensor commands'. [7]

b) Write a short note on coordinate systems of robot. Which coordinate system is best suited for robotic systems? [8]

Q3) a) Explain the following VAL codes and comment on output after execution of codes : [7]

- | | |
|-----------------|------------------------|
| 1) APPRO P2 150 | 2) WSET 1 = 18, 27, 73 |
| MOVE P2 | MOVE X1 |
| OPENI | WSTART 1 |
| DEPART 72 | CIRCLE X1, X2, X3 |
| | WEND 0.5 |

b) Write a pick and place VAL program for below given data : [8]

Assume speed percentage : 60

Pick coordinates : (355, 100, 390, -175, 2, -139)

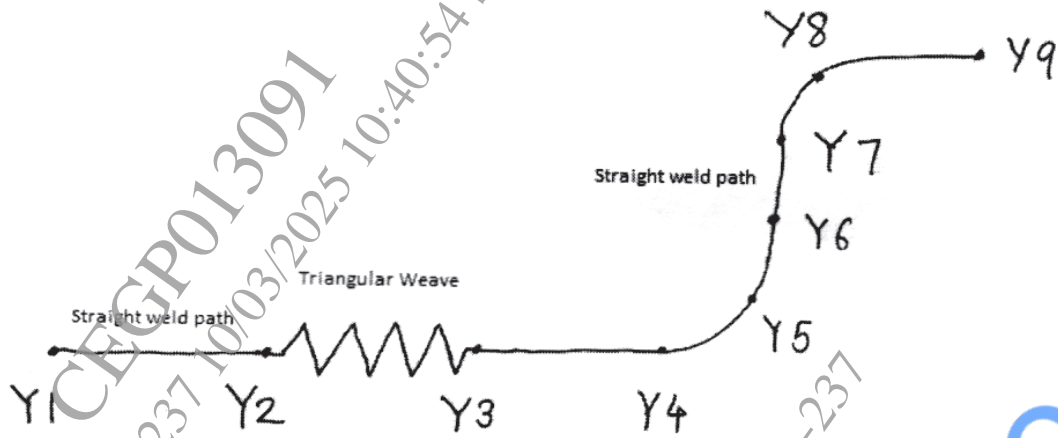
Place coordinates : (355, 244, 390, -175, 9, -139)

End effector : Gripper

OR

P.T.O.

- Q4) a) Write a short note on different Hand control commands in VAL programming language. [7]
- b) Write a VAL code for weldment of the following path. [8]



Details of trajectory path : Y1 is Home position, Y1-Y2 is straight path, Y2-Y3 triangular weave, Y4-Y5-Y6 circular arc, Y6-Y7 is straight path, Y7-Y8-Y9 circular arc.

