

Total No. of Questions : 6]

SEAT No. :

P39

[Total No. of Pages : 1

APR-17/B.E./Insem. - 43
B.E. (Electrical) (Semester - II)
ROBOTICS AND AUTOMATION
(2012 Pattern)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right indicate full marks.*
- 3) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) Define spatial resolution, DOF and work envelop with one example each. [6]
b) Discuss on cylindrical robot. [4]

OR

- Q2)** a) Explain various joints with neat sketches. [5]
b) Explain various end effecters. [5]

- Q3)** If a point P $[1, 2, 1]^T$ is transferred in x direction by 5 unit and in y direction by 4 unit. Find final point P¹. [10]

OR

- Q4)** If a point P $[1, 2, 1]^T$ is rotated around x axis by 30° ; around y axis by 60° and then b around z axis by 90°. Find Final point P¹. [10]

- Q5)** a) Explain denavit Hartenberg criteria. [5]
b) Explain kinematic chain with neat sketch. [5]

OR

- Q6)** Explain Forward solution of robotic manipulator for PUMA robot. [10]

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