

Code No: RT32034

R13

SET - 1

III B. Tech II Semester Supplementary Examinations, November/December - 2016
ROBOTICS

(Mechanical Engineering)

Time: 3 hours

Maximum Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

PART -A

- 1 a) What are the advantages of Robot when compared with NC Machine Tool? [3M]
- b) What are the different parts of robotic arm? Explain. [4M]
- c) What are the properties of Homogenous Transformation Matrix? [4M]
- d) Draw the Block diagram of Jacobian Forward differential Motion Model. [4M]
- e) What are the different interpolations used for Robot Programming? [4M]
- f) Explain the working principle of Pneumatic actuators. [3M]

PART -B

- 2 a) Write some applications of robots. What do you think of future of robots? [8M]
- b) Define Automation. Discuss the reasons for automating the existing mechanized units. [8M]
- 3 a) With the help of line diagram, explain basic components of a Robot system. [8M]
- b) With neat sketch, explain Robot Architecture. [8M]
- 4 Describe about Inverse and Backward analysis of serial SCARA (PRRRP) Robot. [16M]
- 5 For R-P-R arm manipulator, obtain Jacobian to express the Cartesian velocities in terms of Joint velocities. [16M]
- 6 a) Explain in detail about the Trajectory for cubic polynomials. [8M]
- b) Discuss different features of Trajectory planning in Robots & their significance. [8M]
- 7 a) With neat sketches, explain velocity sensors used in Robots. [8M]
- b) Discuss in detail about the design of Remote centered devices used for Assembly Operation. [8M]

