Code No: 138AA **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, July - 2021
ACTUATORS AND ROBOT SYSTEMS
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks

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1.a) Explain the applications of robots in detail in a manufacturing industry.
b) Define the importance of Roll, Pitch and Yaw in robotics. [7+8]

2.a) How are robots classified? Discuss.
b) What are the future applications of robot? [7+8]

3.a) For a two degrees of freedom robot of your own configuration, explain the procedure to solve an inverse kinematics problem.
b) Explain the tanks involved in trajectory planning. [7+8]

4.a) Explain the operation of Micro switches and its applications.
b) Explain the working principle of tactile sensors used in robots. [7+8]

5.a) Discuss any three applications of sensors in robotics.
b) Explain the functions of resistance transducers. [7+8]

6.a) Explain the components of a hydraulic system with a neat schematic diagram.
b) Explain the principle of operation of the following:
i) Solenoids ii) Encoders. [7+8]

7.a) Discuss about various types of AC Motors used in robotics.
b) Discuss about the WAIT, SIGNAL, DELAY commands. [7+8]

8.a) What are the methods of robot programming.
b) Differentiate between VAL and RAIL robot programming language. [7+8]

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