JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-VI Semester (ECE)

COURSE CODE (CREDITS): 18B1WEC737 (3) MAX. MARKS: 15

COURSE NAME: ROBOTIC SYSTEMS AND CONTROL

COURSE INSTRUCTORS: EPN MAX. TIME: 1 Hour

Note: (a)*All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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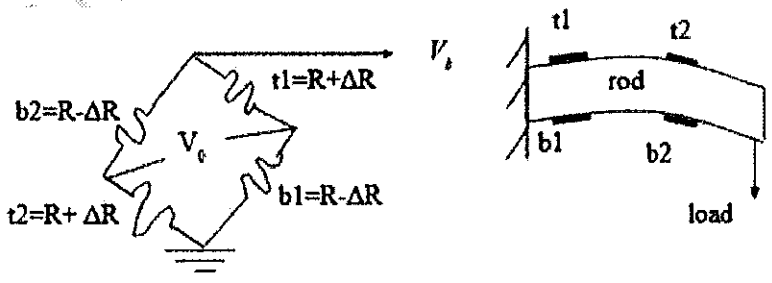
Q1. Briefly describe the concept of an Industrial Robot. Provide examples of industrial applications where robots are commonly used. [Q1, 2M]

Q2. Discuss the laws of robotics as proposed by Isaac Asimov. Explain how these laws influence the design and behavior of robots. [Q1, 2M]

Q3. Discuss recent advancements in robotics, focusing on emerging technologies and their impact on various industries. [Q1, 2M]

Q4. What is an "Open Kinematic Chain"? With simple diagrams, describe revolute joint and prismatic joint. [Q1, 3M]

Q5. Four strain gauges t1, t2, b1 and b2 are connected in a Wheatstone's bridge arrangement as shown below. Calculate the output voltage, V_o, if the change in resistance ΔR = 0.01 Ω for 1kg load, and original resistance R=100 Ω, and supply voltage V_b = 10 V. [Q2, 3M]



Q6. With a neat sketch, explain the working and construction of Mass spring type accelerometer. Describe a procedure to calibrate 3D accelerometer. [Q2, 3M]
