

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-VII Semester (OE)

COURSE CODE (CREDITS): 20B1WEC731 (3)

MAX. MARKS: 15

COURSE NAME: AUTOMATION AND ROBOTICS

COURSE INSTRUCTORS: Dr Emjee Puthooran

MAX. TIME: 1 Hour

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*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. What were the major milestones in the industrial revolutions related to automation? Discuss the impact of automation on employment and productivity. [CO1, 2M]
- Q2. What are the key stages of a typical industrial product life cycle and how does each of these stages impact the strategies for product development, marketing, and production? [CO1, 2M]
- Q3. Identify the primary elements that impact the cost of production per unit and the total time required for production within a specific industry. Analyze how each of these elements contributes to the overall expenses and time frames involved in manufacturing. [CO1, 3M]
- Q4. What are the various layers within the automation pyramid, and how do they contribute to the overall structure of industrial automation? Provide a sketch of the automation pyramid and offer a brief explanation of each layer, including its role and function in the automation process. Explain how these layers work together to achieve efficient and effective automation solutions in an industrial setting. [CO1, 4M]
- Q5. How does a mass-spring type accelerometer function to measure acceleration? With a neat sketch explain the operational principles of a mass-spring type accelerometer, including how the mass, spring, and damping mechanisms interact to detect changes in acceleration. Detail how the displacement of the mass in response to acceleration is measured and converted into an electrical signal. [CO3, 4M]
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